SELECTIONS

FROM

THE RECORDS



OF THE

MADRAS GOVERNMENT.

Published by Authority.

No. 18.

REPORT

OF THE

RAILWAY DEPARTMENT,

FOR

1854.

MADRAS:

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1855.

RAILWAY DEPARTMENT.

REPORT FOR 1854.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 118.

Extract from the Minutes of Consultation, dated 12*th June*, 1855.

Read the following letter from the Consulting Engineer, on a letter from the Railway Agent.

(Here enter 14th May, 1855.)

1. In reviewing Colonel Pears' Report of his recent inspection of the Railway Works from the Western Coast to Madras, the Government had occasion to notice some of the points adverted to in the present report on the operations of the Railway Department during the year 1854, and these therefore it will not be necessary to touch upon again. They are, however, gratified to find it recorded in Paras. 10 and 22, that " the progress of the work generally has been satisfactory, and will bear very favorable comparison with similar works in other parts of the world" and that the progress in the first three Districts, has been " and continues to be sufficiently good to justify the expectation that the line as far as Arcot will be opened for traffic before the end of the present year."

2. The Government are glad to learn that the Railway Officers have received from the Collectors of the several Districts every proper aid and facility in obtaining possession of land, and in prosecuting their work; and that the inhabitants have very rarely offered any opposition to their proceedings, which have in consequence been carried on with little difficulty and no interruption. Owing to the protracted drought, the people have derived great and timely relief from the unlimited employment afforded them by the Railway works, which during the two past seasons have proceeded, with only a few days interruption. It is also gratifying to notice that many of the Natives of the country have shown a disposition to engage with spirit in the business of supplying Sleepers for the Railway; and that, during the past year, contracts for this purpose have been entered into to a large extent. Supplies of materials, &c. for the Railway have also been received from

England in considerable quantities; and it is hoped that the works will be prosecuted with vigour to a successful and early completion.

3. Great credit is due to the Resident Engineer, Mr. Wilson, for the handsome and substantial bridge of [illegible] Arches, built over the Cortilliaur; which is stated to be the only work completed in 1854, deserving of special mention—and the Government notice with satisfaction the favorable mention made of the services of the European Inspectors who were engaged in this country, and especially of the men of the 15th Hussars employed under the Engineers. The Chief Railway Engineer also reports favorably on the Engineering pupil Establishment, who are stated to have passed through their first year with credit to themselves and advantage to the Company. The progress of the Natives in learning to lay Rails is also said to have been most satisfactory. Mr. Bruce feels convinced that when carefully directed and fairly remunerated, the Natives of the country will be found quite able to perform many of the duties for which they are generally considered unfit.

4. As the Government Press is now fully occupied Colonel Pears is authorized to arrange with any private Press, that may be willing to undertake it, for Printing the Report for 1854, with the Correspondence connected with it, as Appendices, as in the Report for the preceding year.

5. Colonel Pears has in the opening Para. of his Report adverted to the delay which has occurred in its submission. It is very desirable that these reports should be furnished as quickly as possible after the close of the year to which they refer, so as to be printed and circulated within good time afterwards.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

To Lieut. Colonel T. T. PEARS, c. b.,
Consulting Engineer for Railways.

Railway Department.
Consulting Engineer's Office.

No. 57.

From Lieut. Colonel T. T. PEARS, c. b.,
Consulting Engineer for Railways.

To the Chief Secretary to Government.
Fort St. George.

Sir,

I regret that my absence from Madras on duty, together with other circumstances which I could not control, have caused so great delay in the submission of the accompanying papers, with the following brief report on the operations of the Railway Department during the year 1854.

2. The surveys undertaken by authority of Government, and conducted by Lieutenants Roberts and Tyrrell, have been brought to a close; and the

reports of those Gentlemen submitted to Government with my reports, dated respectively the 5th June and 7th October 1854.

3. The Engineers of the Railway Company have been since set to work on the line surveyed by Mr. Tyrrell. The question of the Cuddapah and Bellary lines, considered in Mr. Robert's Report is still under the consideration of Government.

4. From my last Annual Report it will be seen that at the end of 1853, the Railway Company had seven Engineers employed under the Chief Engineer at the beginning of 1854. These gentlemen were thus employed—

Mr. MacNair, Assistant Engineer in charge of District 1, (Madras Division).

Mr. Wilson, Resident Engineer, in immediate charge of District 2, General Supervision of Madras Division.

Mr. McMaster in charge of District 3.

The above 3 Districts include the whole line, (70 miles) from Madras to Trivellum.

Mr. Henderson, (Assistant Engineer) on District 7, Baramahl.

Mr. Beattie, Resident Engineer, District 8, (near Salem).

Mr. Ross, Assistant Engineer, 13th District, (Coimbatore).

Mr. Gale, Resident Engineer, District 14, (Palghaut).

5. At the beginning of 1854, work had been actually commenced on Districts 1 and 2 only. On the remaining Districts the preliminary works of surveying, levelling and staking out had yet to be performed.

6. Frequent demands having been made on the Railway Board at Home for more Engineers, one Resident Engineer (1st Class), Mr. Collins, and 4 Assistants, Messrs. Fenwick, Latham, Paton, and Dixon, arrived during the year, and were placed severally in charge of Districts 4, 5, 6, 15, 16.

7. By these arrangements the whole of the line between Madras and Salem was taken in hand, as well as that from Coimbatore to the Western Coast—that portion which lies between Salem and Coimbatore being left untouched, pending the decision* of the Honorable Court on a proposition made by some of the Railway Directors regarding its proper course.

Since received- Ex. Mins. Cons. No. 68, dated 5th April 1855.

8. The amount of work actually performed during 1854, was as follows:

	Earthwork. C. Yards.	*Masonry.* C. Yards.	*Permanent Way.* Lin. Yards.
District 1	7,64,467½	6,979	19,361
„ 2	5,99,297	21,028	10,846
„ 3	5,44,145	4,998½	0
Total	1,907,909½	33,005	30,207

Considerable progress has been made also on the Madras Terminal Station.

9. Upon the remaining Districts, the duties of the Engineers were almost wholly confined, during the year, to surveying, levelling, &c.; and in some cases the progress of this work was not such as could be considered satisfactory, and was remarked upon in consequence by Government.

* Ex. Mins. Cons. Nos 224 and 247, dated 25th October and 28th Nov. 1854.

b

10. The Progress of the work generally has been satisfactory; and will bear very favorable comparison with similar works in other parts of the world.

11. In my last Annual Report I observed, with regard to the probable supply of Sleepers, that the first invitation for tenders had been responded to, to a very trifling extent, but that subsequently tenders had come in, and contracts had been entered into for the supply of 99,000 Sleepers. During the past year, further contracts for the supply of 2,73,160 at an average rate of 3¼ Rupees, have been entered into; and many among the Natives of the country have evinced a disposition to enter into the business with spirit and determination. The number of Sleepers actually delivered during the year was 38,276. Most of these are very good; but it requires much vigilance on the part of the Engineer, whose duty it is to examine and pass them, to prevent the smuggling in of woods, of unauthorised description or of inferior quality.

12. I considered it desirable that the Sleepers, of different descriptions of Timber, of the relative qualities of which we know so little, should be stamped with distinguishing marks. The Agent has reported that it is the intention of the Chief Engineer to take this precaution; and should the measure be fully and carefully carried out, the Company may expect to derive from it important assistance, and instruction, in the future selection of materials for their permanent way.

13. Supplies of materials for the Permanent Way, of Rails,* Chairs, &c., have been received from England in considerable quantities. The great want appears to have been Trucks and Wagons and (latterly) Engines, for ballasting, leading stores, &c. along the completed portion of the line.

* 17,343 Rails
1,36,772 Chairs
42,132 Fishing Plates.
1 39,834 Wood Keys.
2,79,000 Trenails.
1,11,275 Screw Bolts, Nuts and Washers.
4,340 Chairs for stone Blocks.
7,960 Iron Spikes, for stone Blocks.
2 Iron Sleepers.
100 Augurs

14. The total amount of money paid and advanced to the Agent, during the year 1854, was Rs. 1,083,700-9-8. The total expenditure up to the end of November was,

	RS.	A.	P.
Agency and Management.....................	26,230	4	11
Stores, &c	162,327	4	10
Engineering and Construction.....	618,093	14	4
Total.........	806,651	8	1

Up to the end of December, it would amount to about Rs. 942,678; but, as the accounts for that month have not yet been forwarded in a state sufficiently complete to admit of their being submitted to Government, I cannot state this amount with precision.

15. As far as we have yet gone it appears probable that the estimates for Districts 1 and 2, will, in the aggregate, not be exceeded; though in some particular departments as in Masonry, the cost will exceed the original cal-

* Ex. Min. Cons. Nos. 77 and 182, dated 19th July and 13th Dec. 1853.

† Ex. Min. Cons. No 48, dated 24th Feb. 1854.

culation. The sanctioned* estimate, for District 1, is Rs. 296,766 and the amount expended, up to the end of 1854, was Rs. 181,322, leaving a balance of Rs. 115,444 to complete. On District 2, the original estimate sanctioned† amounts to Rs. 309,999, while the expenditure, up to the end of 1854, amounts to Rs. 202,349, leaving a balance of Rs. 107,650. On both of these Districts the works remaining, on that date, consisted of a small amount of Earthwork, and Masonry, laying Permanent Way, Fencing, Gates, &c.

16. The works on these Districts have been carried out in part by small Native Contractors, and in part by day labourers. It is of course desirable to encourage, and employ, as far as possible, the former; but in many cases recourse to the latter has been forced upon the Engineers by the short-sightedness and the want of energy of the Contractors. It is a fact worthy of remark, that, under the system of regular and fair payment, carried on through the Agency of European Inspectors on the Railway, the system of daily labour has rarely failed to secure a respectable body of work people; while in the very same place the Contractors, though receiving liberal terms themselves, constantly fail to procure the amount of labour, necessary to the completion of their work, within a reasonable time.

17. I have only to add that the Collectors of the several Districts have in all cases promoted the work by all legitimate means in their power --that there has been no difficulty whatever in getting possession of land —that the Natives of the country have very rarely offered any opposition to the Railway Agents—and that I have every reason to believe, that the Engineers generally have evinced much tact and temper in their intercourse with the people, and that, in consequence, their duties have been carried on with little difficulty and no interruption.

18. The season—one of severe trial to the people of the country—has been on the whole favorable to the Railway works—an increased supply of labour has resulted from the protracted drought; while the people themselves have drawn great and well-timed relief from the unlimited employment thus afforded them. The two past seasons have been most remarkable. The works on the Railway were begun in June 1853—they have proceeded, with only a few days interruption, up to the present time; and none of their bridges or other works of drainage have yet had water enough through them to test their stability, or the sufficiency of the water-way. There has been no sickness of consequence among either Europeans or Natives. The general good health of the people employed upon the work has been most remarkable.

19. The European Inspectors, whose services were engaged in this country, have given great and general satisfaction: and the men from the 15th Hussars have especially merited and received the approbation of the Engineers under whom they have been employed.

20. Government will observe with satisfaction the good report made by Mr. Bruce, on the Native pupil Establishment. This is a small beginning;

but it offers in my opinion exactly the right kind of opening to the educated Natives of Madras.

21. The only work completed in 1854, which deserves special mention, is the stone bridge of 26 Arches over the Cortilliaur. This work has been carried on to completion with great vigour and success. It is a handsome and substantial structure, built of roughly dressed granite. There was some haste in pushing it forward, towards the end of the year, in anticipation of a heavy monsoon which never came—but the workmanship is good, and highly creditable to the Resident Engineer, and to the Inspector in immediate charge—since dead.

22. The progress on the three first Districts has been, and continues to be, sufficiently good to justify the expectation, that the line, as far as Arcot, will be open for traffic before the end of the present year.

* No. 76, dated 8th March, 1855.

23. The Statements and Accounts accompanying the Agent's Report* are intended to give merely approximate results. As such, they have been forwarded already to the Directors at Home; and not being intended to stand as records, or submitted for acknowledgment, and sanction, they have not been strictly examined in my office.

I have, &c.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS,
14th May, 1855.

APPENDIX No. 1.

AGENT'S OFFICE, MADRAS RAILWAY.

No. 76.

FROM MAJOR T. A. JENKINS,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. In making the Annual Report of the operations of the Madras Railway for the past year for information of the Government, I regret that having assumed charge of my Office, only a few days prior to its close, I am unable to speak from personal experience, and to enter so fully into the subject, as otherwise I should have wished.

31st January, 1855.

2. In the report of the Chief Engineer, addressed to the Chairman and Directors of this Company, a copy of which, I have the honor to forward to you, herewith, Mr. Bruce has explained the system he has followed, and the progress made in the Construction of the line. I need not therefore recapitulate what he has so clearly set forth.

3. At the commencement of the year 1854, Mr. Bruce had, on his staff, seven Engineers: in the course of the year, five more Engineers arrived from England; but at so recent a period, that, although attached to Districts, the work done by them up to the close of the year is scarcely worth noticing.

4. In paragraphs 8 and 9, Mr. Bruce explains, that certain parts of the country, through which the line passes is of a more difficult description than others, requiring more labor and time in the construction of the works. He had therefore distributed his Engineers in the first instance to those districts. The operations consequently are not at present continuous. As additional Engineers arrive, they will occupy the vacant Districts.

5. The progress of the laying out, and survey of the line, has been impeded and rendered tedious, Mr. Bruce states, by the surveys having to be made in some Districts through dense jungle, and from the desire to select the best course; and also from the Engineers and their attendants having suffered much from fever.

6. I annex a statement marked A, showing the work done, in each District of 25 miles, from Madras to the Western Coast.

7. The Principal Terminus Station at Royapooram, Madras, may be said to be about half finished. The enclosure, a large area, has been walled in and levelled. The smaller Stations, for the first 50 miles, are in an advanced state.

8. The embankments, bridges and cuttings, for the first 50 miles are nearly completed; with the exception of a few miles, and about 20 miles of Permanent way have been laid. In the remaining 21 miles, to Trivellum, the construction of the works is progressing favorably.

6. The Bridge over the Cortilliaur, of 26 Arches, of 30 feet span each, is nearly completed; and the Bridge over the Poiney at Trivellum, of 56 Arches, of 30 feet span each, has the foundation laid.

10. I have attached a statement showing the quantity of Permanent way and Stores shipped from England, and landed at Madras to 31st December, 1854; and a second statement showing the cost thereof, including freight and landing charges. The high price of iron, and difficulty in obtaining freight, on any terms, have tended to enhance the cost of the Permanent way, materials, very considerably; and, to some extent, impede the shipments to this country; but those obstacles are disappearing—freight is more plentiful—stores are now being received in large quantities.

11. When the last Report was made, it was supposed that there would be much difficulty in procuring Sleepers. You are aware that Contractors have come forward, and that supplies are procurable to any amount. Fine timber—for the purpose, much of it hitherto unknown, in the jungles beyond Vellore—has been brought to light; and as the construction of the line advances into the interior the cost of the Sleepers will probably be very much reduced. The statement B, will show the number of Sleepers delivered up to 31st December last, and the cost of the same.

12. Mr. Bruce reports well of the Engineer Pupils. I have no doubt, but that the Establishment will be found a most useful one to the Company.

13. I have to obviate reference, prepared a Statement showing the outlay on each District up to 31st December last; also an approximate balance sheet (the accounts for the last three months not having been sanctioned by the Government) showing the amount received by the Company from the Goverment up to 31st December last, and the expenditure.

14. Trusting that the operations of this Company, for the construction of the Railway, as herein reported, may meet the approval of the Government.

I have, &c.,
(Signed) T. A. JENKINS,
Agent.

MADRAS,
8th March, 1854.

Submitted with Annual Report, No. 57, dated 14th May, 1855, for the information of Government.

MADRAS,
14th May, 1855.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer of the Madras Railway.

To THE CHAIRMAN AND DIRECTORS OF THE MADRAS RAILWAY.

GENTLEMEN,

In the report which I had the honor to submit last year of our progress up to the end of 1853, I stated the system which had been adopted for the construction of these works, and the measure of success, which had attended it during the short trial to which it had then been put.

2. I shall not go back upon this subject; but in the present report shall state, as shortly as I can, what the experience of the first entire year at work has been—what has been accomplished—and, so far as I am able, the expenditure.

3. At the commencement of last year, there were seven Resident and Assistant Engineers, two engaged in the construction of the first fifty miles originally sanctioned, one in the staking out of the third District, preparatory to commencing the works

whilst the remaining four began, in February and March, the preliminary surveys, near Coimbatore and Darampoory.

4. As each Engineer has charge of twenty-five miles, we were provided with Engineers for one hundred and seventy-five miles in all.

5. Allow me to draw your attention, first to the surveying, and after that to the construction.

6. The Districts and the names of the Engineers in charge are shown in the accompanying Map, I shall therefore refer to them by number.

7. District 3 was partly staked out, and the works begun in March; and the remainder of the staking out and surveying was completed by the Engineer, whilst the first part was under construction. Mr. McMaster having to attend to both duties at once, the completion of the survey was necessarily retarded; but the general interests of the work advanced.

8. Considering the magnitude of the work undertaken, viz.; the completion of the whole line from Coast to Coast with various branches, and the few Engineers at our disposal, it was considered desirable to pass over the more easy and favorable portions of the line, and place the Engineers upon the most difficult, the execution of which must necessarily occupy the longest time.

9. No Engineers were accordingly placed on Districts 4, 5 and 6; but Messrs. Beattie, and Henderson were sent to Districts 7 and 8, to select the best line from the Baramhal to Salem, down the Moroor Pass.

10. This has been a work of no ordinary difficulty; a long and tedious process surrounded by obstacles.

11. The appearance of Europeans in so wild a District—unarmed with power—vested with no authority—unconnected with Government—was calculated to excite the astonishment and suspicion of the inhabitants; and when it was found that all labour was to be procured irrespective of the heads of villages, by holding out to the Coolies themselves the inducement of a "fair day's pay for a fair day's work," there instantly arose, on the part of all the inferior native officials, an amount of petty persecution, and passive obstruction, which can only be understood by those who have experienced it.

12. I am happy to say that this opposition has been invariably broken down by the perseverance of the Engineers; and the people along the course of our line begin to understand the blessing of being able to carry their labour to the best market, without seeking the sanction or caring for the pleasure or ministering to the avarice of some petty tyrant. A result, the beneficial effects of which, in elevating the position of the people, we can scarcely calculate.

13. Besides the difficulties just enumerated, which are common to the whole line, the natural features of District 8 rendered the process of carefully selecting a line of Railway, a difficult and tedious process. There are many miles of dense jungle, and the line itself has to wind along the base of hills down the ravine leading from Baramhal to Salem. The natural inequalities of the surface are very great; and great care is required in selecting the best course.

14. Perhaps the most formidable and serious difficulty of all has been the prevalence of fever, which spared neither European nor Native.

15. Mr. Beattie was for months able to do little on account of his own illness; and at other times his hands have been severely crippled by the sickness of those under him; he has however persevered most laudably, when many men would have given up through fear or despair.

16. A small portion of Districts 7 and 8, still remain to be staked out at the end of last year, though a great part was under construction.

17. The remarks made concerning Districts 6 and 7, apply in the main to Districts 13 and 14, in the charge of Messrs. Gale and Ross. There, too, the works are heavy; much heavier than I anticipated when reporting to you last year. The jungle is dense and fever, though not so formidable an enemy as at the base of the Shervaroy Hills, is still to be dreaded in the Walliah jungle. Mr. Ross was laid up for about four months.

18. The line has been selected with great care: the works have been commenced; but a large portion still remains to be staked out.

19. The difficulties have however been overcome; and I hope soon to be able to submit the whole working section.

20. To Districts 15, 16 and 17, Messrs. Paton, Dixon and Fenwick, have respectively been appointed; but as these Gentlemen only joined at the end of the year, I am not able to give any account of progress.

21. The important section of the line, between Coimbatore and Beypoor, has now its full complement of Engineers; and shall be prosecuted with all the vigour we can command.

22. During the past year, we have felt the want of one or two Extra Engineers, who could take the places of any who, from illness or other causes, were temporarily laid aside. I think it would be found the true economy to have rather more Engineers, than one, actually required, to occupy each District of 25 miles.

23. Having glanced, generally, at what has been done in surveying and examining the country, I shall now turn your attention to the Districts on which the work of construction has been going on.

24. Districts 1 and 2, under the charge of Messrs. Wilson and MacNair, comprising the whole of the line originally sanctioned, have been carried forward favorably during the past year; though we were kept back materially by a delay of fully six months in the receipt of rails.

25. The whole of the Earthwork and Masonry are finished, with trifling exceptions, of no moment. A large quantity of ballasting has been done, and about 20 miles of Rails laid. The plate laying is now going on most satisfactorily, and as fast as supplies from England will allow; but the ballasting has been retarded in consequence of not having received the waggons indented for in April 1853; it being impossible to get a sufficient supply of axles in this country.

26. The total amount of Earthwork, done during the year, was 14,94,817, making a total of 21,66,645, which has cost, including the repairs of two Monsoons, and all the trimming and turfing 0-1-¾ per cubic yard. This includes the very hard cuttings, and rock which cannot be touched without Gunpowder.

27. In Masonry, there has been built cubic yards 37,757, principally granite, which has cost us, on an average, of about Rupees 4-14-9 per cubic yard.

Exclusive of Stations.

28. This is more than it ought to have been; but in comparing the cost with other works in this country, the comparison should be instituted not with the common walling price of the country, but the price of arched work.

29. The Cortilliaur Bridge, with arches 26 in number, was, by dint of great exertion, keyed in November last.

30. It was a matter of great importance, to complete this large work without any

damage being done to it by the monsoon: the arches were accordingly closed within one year from the time of commencing the work. To gather the materials and build the bridge all in one year has not been effected without the expenditure of a larger sum of money than would have been necessary, had it been carried on with more composure and less speed.

31. The object to be gained warranted the outlay.

32. The amount of ballasting done was 43,585 cubic yards and the average cost per cubic yard about Rs. 0-3-3, Rails laid 30,206 lineal yards: the cost per yard being Rs. 0-7-4 so that if in some things we have exceeded the estimate, in others we are below it.

33. The third District was begun in March, but was not in full operation along its whole length until August. The amount of Earthwork done was 544,145 the average cost being 0-1-5½ per cubic yard. The high rate here paid is satisfactorily accounted for by the great height of the embankment, and the extreme hardness of the material. We have also given more than would have been given, had it not been a matter of great importance to attract labour and finish the line to Trivellum as soon as possible.

34. The quantity of granite masonry executed was yards 4,998 and the average cost Rupees 4-8-4.

35. The bridge which is being built over the Poincy river consists of 56 arches of 30 feet span. It is founded on brick wells; but built of granite, and is as in all other cases made for a double line of Rails. This work has got on well; and I am in great hopes of being able to complete it before the end of the year, if not interfered with by the demand for labour at the anicut which is being built by Government over the Palaur river; as the tacit power of Government will sometimes divert labour out of the channel it would flow naturally, if free.

36. Districts 7 and 8, were begun in a few places in October last. Here labourers are scarce; and it is altogether a more difficult thing to carry on extensive works than in the more populous Districts. There is a total absence of skilled labour, which must be imported from other places, and the want of experience, on the part of the people, in works of almost any kind prevents them from coming forward to do the work by contract. We have accordingly been obliged hitherto to execute nearly the whole by daily labour, and to provide tools for the people. This involves a large amount of minute supervision, and great personal skill on the part of the Engineers and Inspectors, which I hope will presently be remedied.

37. Past experience, in this most unfavored part of the whole line, convinces me however of the practicability of procuring, except at particular seasons, as many unskilled labourers as we require, when their payment is liberal and regular; but we must in most cases be prepared, as in all large works, to give more than the rates which usually prevail in the neighbourhood.

38. The quantity of Earthwork done in these two Districts has been small, viz., 55,051 and the average cost 0-1-7¼. The ground is of the very hardest description, generally compact decomposed granite, when not rock itself.

39. A good deal has been done towards gathering materials for the bridges; but little work has yet been executed.

40. Two considerable bridges are necessary, one over the Muttoor, and the other over the Panar River; there are also some very formidable cuttings.

41. Upon District 13, the construction was commenced in September last. It is not yet advancing so rapidly as I could wish, and as I have no doubt it will do

soon. Beyond this, to the west, the turf has not been turned; but the Engineers are actively preparing for it.

42. The station on the Beach at Madras has been enclosed by a brickwall; and the whole area levelled to its proper height, and the Rails laid down to the Beach. The main building has been raised as high as the floor of the upper rooms. The foundation of warehouses has been built to formation level.

43. The workshops have not been begun; as they were ordered by Government not to be built at Royapooram—a decision which I regret.

44. The minor stations on the first two Districts are nearly completed.

45. On looking at my original estimate, I see no reason to think that it will be exceeded, though I cannot see that in it I have made any provision for the repairing of embankments and the maintenance of way.

46. On comparing the actual cost with the original estimate of Colonel Pears, I find that we are under it in Earthwork and Ballasting. As regards Masonry the price per cubic yard is not given by Colonel Pears; but I know we are higher than he calculated on, higher in fact than the general rate in the Presidency. This is to be accounted for, principally, by the larger size of brick we have adopted; which not being in accordance with the customs and prejudices of the people is as yet more expensive than that generally used: and in making any comparison it must further be borne in mind that, where works of this description are executed by or for Government, they have the command of all the trees in the Districts as firewood, whereas we cannot cut so much as a tent peg or the leaves of a Palmyra tree without paying for them.

47. The plate laying has cost, exclusive of the carriage of materials, which cannot accurately be stated at present about 16,799-8-1, being Annas 7 Pice 4 per yard; but as further lifting and adjusting may be required, it should not be estimated at less than 8 Annas per lineal yard.

Note.—This will be reduced as the workmen gain experience.

48. The progress of the natives in learning to lay rails, under the tuition of Europeans; has been most satisfactory, and I am convinced that, when carefully directed and fairly remunerated, the natives of this country will be found quite able to perform many of those duties for which they are generally considered unfit.

49. Making use of the data supplied by the Agent, showing the cost of the permanent way, I estimate that the entire cost of the first seventy miles, inclusive of Stations and rolling Stock, will amount to Rupees 40,00,000 or nearly £6,000 per mile.

50. Much has been done, which cannot be specially stated.

51. The Engineering pupils deserve special notice; they have passed through their first year, with credit to themselves, and advantage to the Company.

52. Your Engineers and Inspectors have, upon the whole, enjoyed good health, and are at present in a very efficient state.

53. It will, I trust, be a matter of satisfaction to you, that, as a whole, up to this time the Construction of the works has not exceeded either Col. Pears' estimate or mine and that there has been no delay is proved by the fact, that we are in advance of the supplies from England, which are now flowing in very fast; and if further proof is required I would draw your attention to the fact that in the printed official correspondence, Col. Pears stated that it would be eighteen months, after the arrival of the Engineers in this Country, before they could begin to lay the rails; and one year more before fifty miles could be opened. The results, as now stated, show fifteen miles laid within eighteen

months of the arrival of the first assistants, and there is nothing which I am aware of; that will prevent the whole of the line, first projected, from being finished within the time named.

54. I will only add, in conclusion, that if you are able to send out the rails, I do not despair of opening the line to Vaniembady in one year; from this date, by which time the works, beyond that, may be expected to be in a very forward state.

I have, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) T. A. JENKINS,

Agent.

FORM G.

MADRAS RAILWAY.

General Balance Sheet for the Engineering Department from the commencement up to the 31st December, 1854.

		Vouchers.	Disbursements up to 30th November, 1854.			Disbursements for December, 1854.			Total Expenditure up to the 31st December, 1854.			Received up to 30th November, 1854.			Received during December, 1854.			Total Receipts.			REMARKS.
			RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	
District No. 1...	Special Superintendence	B.	892	3	1	53	6	6	945	9	7	0	0	0	0	0	0	0	0	0	
	Construction	D.	2,18,923	15	8	15,362	14	6	2,34,286	14	2	2,58,750	0	0	40,000	0	0	2,98,750	0	0	
District No. 2...	Special Superintendence	B.	1,282	11	3	76	2	0	1,358	13	3	0	0	0	0	0	0	0	0	0	
	Construction	D.	17,7464	6	11	24,885	3	8	2,02,349	10	7	1,78,750	0	0	20,000	0	0	1,98,750	0	0	
District No. 3...	Special Superintendence	B.	883	2	4	39	1	0	922	3	4	0	0	0	0	0	0	0	0	0	
	Construction	D.	6,2431	12	6	25,847	0	7	88,278	13	1	65,000	0	0	20,000	0	0	85,000	0	0	
District No. 4 .	Special Superintendence..	B.	541	15	1	72	6	2	614	5	3	0	0	0	0	0	0	0	0	0	
	Construction	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 5 .	Special Superintendence..	B.	309	8	8	35	15	10	345	8	6	0	0	0	0	0	0	0	0	0	
	Construction............ ..	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 6 ..	Special Superintendence..	B.	398	4	2	77	1	6	475	5	8	0	0	0	0	0	0	0	0	0	
	Construction......	D.	0	0	0	302	8	10	302	8	10	0	0	0	0	0	0	0	0	0	
District No. 7..	Special Superintendence..	B.	724	0	10	60	12	10	784	13	8	0	0	0	0	0	0	0	0	0	
	Construction....	D.	2,149	13	1	1,131	0	0	3,280	13	1	8,000	0	0	0	0	0	8,000	0	0	
District No. 8	Special Superintendence..	B.	1,250	8	2	55	7	0	1,305	15	2	0	0	0	0	0	0	0	0	0	
	Construction..............	D.	8,423	3	8	4,292	7	11	12,715	11	7	8,000	0	0	10,000	0	0	18,000	0	0	
District No. 9...	Special Superintendence. .	B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Construction........... . ..	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 10...	Special Superintendence..	B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Construction...............	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 11 .	Special Superintendence..	B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Construction...............	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 12..	Special Superintendence. .	B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Construction...............	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 13...	Special Superintendence..	B.	580	10	2	51	14	11	632	9	1	0	0	0	0	0	0	0	0	0	
	Construction	D.	3,880	4	1	2,633	4	0	6,513	8	1	8,000	0	0	0	0	0	8,000	0	0	
District No. 14...	Special Superintendence. .	B.	2,008	8	5	45	14	6	2,054	6	11	0	0	0	0	0	0	0	0	0	
	Construction......	D.	1,254	15	11	289	5	0	1,544	4	11	8,000	0	0	0	0	0	8,000	0	0	
District No. 15...	Special Superintendence..	B.	319	13	0	39	2	9	358	15	9	0	0	0	0	0	0	0	0	0	
	Construction....	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District No. 16.	Special Superintendence .	B.	0	0	0	164	1	8	164	1	8	0	0	0	0	0	0	0	0	0	
	Construction......	D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Workshops	Do...	D.	87,280	1	8	13,461	8	5	100,741	10	1	80,000	0	0	20,000	0	0	1,00,000	0	0	
Chief Engineer ...	General Superintendence.	B.	17,866	10	5	242	8	10	18,109	3	3	45,250	0	0	0	0	0	45,250	0	0	
District No. 17 ..	Special Superintendence.		0	0	0	99	6	8	99	6	8	0	0	0	0	0	0	0	0	0	
		Total...	5,88,866	9	1	89,318	11	1	6,78,185	4	2	6,59,750	0	0	1,10,000	0	0	7,69,750	0	0	
		Balance..	....	...	...	0	0	0	91,564	11	10	0	0	0	0	0	0	0	0	0	
		Total...	....	...	..	0	0	0	7,69,750	0	0	0	0	0	0	0	0	0	0	0	

I hereby certify that the above shows correctly the total amount of Receipts and sanctioned expenditure (exclusive of authorized establishment) up to 31st December. Dated this 11th day of July, 1855.

(Signed) R. ALLON,
Chief Clerk.

(Signed) T. A. JENKINS,
Agent and Manager.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) T. A. JENKINS,
Agent and Manager.

(True Copy.)

(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORM S.

Statement Shewing the Receipts and Expenditure of the Madras Railway Company in India, during the half-year ending December 31st, 1854.

Dr.

Department.	Purpose.	Amount.			Date of Sanction.	Date of Receipt.
	To Balance...	1,13,300	11	6		
Agent	To Advance for Sleepers....................	40,000	0	0	27th June, 1854........	4th July, 1854.
"	" Do. for Contingent Expenses....	3,000	0	0	4th July, 1854.........	10th do.
Engineer ...	" Do. for Construction do. in Dist. 3,	10,000	0	0	11th do.	27th do.
Agent.	" Amount on account of Chairs supplied by the East India Iron Company.......	4,276	4	0	15th do.	21st do.
"	" Contingent Bill for June, 1854...........	7,559	15	5	15th do.	21st do.
"	" Advance for Sleepers.......................	50,000	0	0	18th do.	1st August, 1854.
Engineer ...	" Do. for Construction Expenses in District 1 and 2,...	40,000	0	0	22d do.	26th July, do.
Agent	" Salaries as per Form N. for July, 1854..	2,435	11	7	....	2d August, do.
Engineer ...	" Do. as per Forms A. for do	13,175	10	0		
"	" Advance on account of Workshops	20,000	0	0	1st August, 1854	3d August, do.
"	" Do. for Construction Expenses in District 1 and 3...........	60,000	0	0	22d do.	26th do.
"	" Do. for do. in District 13.........	5,000	0	0	29th do.	13th September, 1854.
Agent	" Salaries as per Form N. for Aug. 1854.	2,435	11	7	....	6th do.
Engineer. .	" Do. as per Forms A. for do	12,651	13	4		
"	" Advance for Construction Expenses in District 2.............	20,000	0	0	5th September, 1854...	6th September, 1854.
"	" Do. for do. in District 7 and 8	10,000	0	0	5th do.	11th do.
Agent... ..	" Contingent Bill for July, 1854.....	3,110	2	9	16th do.	21st do.
"	" Do. for August, 1854.	5,187	8	3	26th do.	3d October, 1854.
"	" Advance for Sleepers.........................	30,000	0	0	26th do	14th do.
"	" Salaries as per Form N. for Sept. 1854	2,435	11	7	....	7th do.
Engineer ..	" Do. as per Forms A. for do......	13,095	1	2		
Agent	" Advance for Contingent Expenses	5,000	0	0	3d October, 1854......	7th October, 1854.
Engineer. ..	" Do. for Construction Expenses in Districts 1, 2, 3, 14 and Workshops,	1,05,000	0	0	10th do.	19th do.
Agent	" Contingent Bill for September, 1854 ..	4,119	6	3	17th do.	21st do.
"	" Salaries as per Form N. for Oct. 1854. .	2,437	0	5	....	2d November, 1854.
Engineer...	" Do. as per Forms A. for do.	12,992	9	9		
Agent	" Contingent Bill for Oct. 1854........	7,624	10	0	14th November, 1854...	18th do. 1854.
Engineer. ..	" Advance for Construction Expenses in Districts 1, 2, 3, 8 and Workshops......	1,10,000	0	0	29th do.	5th December, 1854.
Agent	" Salaries as per Form N. for Nov. 1854.	2,479	11	7	....	2d do.
Engineer ...	" Do. as per Forms A. for do.......	13,473	1	3		
Agent	" Contingent Bill for do.......	5,168	6	3	19th December, 1854...	22d do.
"	" Advance for Sleepers.....................	50,000	0	0	19th do.	22d do.
"	" Salaries as per Form N. for Dec. 1854....	2,502	5	1	....	2d January, 1855.
Engineer ...	" Do. as per Forms A. for do.	15,748	3	2		
	Total Company Rupees...	8,04,109	10	11		

Cr.

Department.	Purpose.	Amount.			Date of Bill.	Date of Sanction.
Agent	By Amount paid on account of Chairs supplied by the East India Iron Company,	4,276	4	0	20th July, 1854	15th July, 1854.
"	" Salaries as per Form N. for July, 1854,	2,435	11	7	1st August, do	
"	" Contingencies as per Form O. for do.	3,110	2	9	8th do.	16th September, do.
"	" Sleepers as per Form R. for do.	21,983	15	10	26th do.	3d October, do.
Engineer .	" Salaries as per Forms A. for do.	13,175	10	0		
"	" Contingencies as per Forms B. for do.	937	6	10	....	19th December, do.
"	" Construction as per Forms D. for do.	34,112	10	3	....	19th do.
Agent... ..	" Salaries as per Forms N. for Aug. do.	2,435	11	7	1st September, 1854.	
"	" Contingencies as per Form O. for do.	5,187	8	3	13th do.	26th September, do.
"	" Sleepers as per Form R. for do.	6,893	10	0	20th do.	3d October. do.
Engineer	" Salaries as per Forms A. for do.	12,551	13	4		
"	" Contingencies as per Forms B. for do.	1,369	5	2	....	30th January, 1855
"	" Construction as per Form D. for do.	54,049	7	6	....	30th do
Agent .. .	" Salaries as per Form N. for Sept. do.	2,435	11	7	30th September, 1854.	
"	" Contingencies as per Form O. for do.	4,119	6	3	7th October, do. .	17th October, 1854.
"	" Sleepers as per Form R for do.	14,680	4	0	23d do.	31st do.
Engineer ...	" Salaries as per Forms A. for do.	13,095	1	2		
"	" Contingencies as per Forms B. for do.	1,028	9	10	....	17th February, 1855.
"	" Construction as per Form D. for do.	51,706	5	8	....	17th do.
Agent ..	" Salaries as per Form N. for Oct. do.	2,437	0	5	1st November, 1854.	
"	" Contingencies as per Form O. for do.	7,624	10	0	7th do.	14th November, 1854
"	" Sleepers as per Form R. for do.	20,935	2	4	11th do.	28th do.
Engineer .	" Salaries as per Forms A. for do.	12,992	9	9		
"	" Contingencies as per Forms B. for do.	998	0	7	....	13th March, 1855.
"	" Construction as per Forms D. for Oct. do.	57,581	13	8	. ...	13th do.
Agent... .	" Salaries as per Form N for Nov. do.	2,479	11	7	1st December, 1854.	
"	" Contingencies as per Form O. for do.	5,168	6	3	14th do.	19th December, 1854.
"	" Sleepers as per Form R for do.	6,752	8	0	26th do.	5th February, 1855.
Engineer .	" Salaries as per Forms A. for do.	13,473	1	3		
"	" Contingencies as per Forms B. for do.	652	13	5	....	19th March, 1855.
"	" Construction as per Forms D. for do.	72,358	15	5	....	19th do.
Agent	" Salaries as per Form N. for Dec. do.	2,502	5	1	2d January, 1855.	
"	" Contingencies as per Form O. for do.	11,655	3	7	19th do.	30th January, 1855.
"	" Sleepers as per Form R. for do.	16,588	11	8	30th do.	13th February, do.
Engineer ...	" Salaries as per Forms A. for do.	15,748	3	2		
"	" Contingencies as per Forms B. for do.	1,113	6	2	....	19th June, 1855.
"	" Construction as per Forms D. for do.	88,205	4	11	....	19th do.
		5,88,852	10	10		
	Balance...	2,15,257	0	1		
	Total Company Rupees...	8,04,109	10	11		

MADRAS RAILWAY,
Agent and Manager's Office,
21st July, 1855.

(Signed) R. ALLON,
Chief Clerk.

(Signed) T. A. JENKINS,
Agent and Manager.

FORM P.

MADRAS RAILWAY.

Statement shewing the Expenditure in India for the month of December 1854, with the Total cost sanctioned by Government up to the month of December 1854.

Department.	Authorized Establishment.			Stores, Contingencies, &c.			Total for December, 1854.			Previously Expended.			Grand Total.			Remarks.
Agency and Management,..................	2,502	5	1	28,243	15	:	30,746	4	4	2,25,546	11	6	2,56,292	15	10	
Engineer (See Statement F.) dated 11th July 1855,............	0	0	0	0	0	0	1,05,066	14	3	57,52,158	1	4	8,57,224	15	7	
Total ..	....	..	..	....	...	...	1,35,813	2	7	9,77,704	12	10	1,113,517	15	5	

MADRAS,
Agent and Manager's Office,
23d *July*, 1855.

(Signed) T. A. JENKINS,
Agent and Manager.

(Signed) R. ALLON,
Chief Clerk.

APPENDIX No. 2.

MADRAS RAILWAY AGENCY OFFICE,
6th October, 1853.

No. 168.

FROM E. SMALLEY, ESQUIRE,
Agent,

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit, for sanction, the undermentioned Statements of Contingent Expenses incurred in the Engineer Department, during the past Month, amounting the aggregate to Rupees 419-2-11.

General Superintendence			367	7	8
Special	do.	District No. 1	24	0	0
Do.	do.	do. „ 2	27	11	3
		Rupees...	419	2	11

2. In the Statement of District No. 1, a Horse Allowance of Rupees 15 per mensem, it will be observed, has been charged again to an Inspector, which called forth a remark from me in my letter of the 9th September, No. 142. The item of Rupees 9, being the funeral expenses of the late Inspector Capell, is explained by Mr. Bruce in the accompanying copy of his letter, dated 4th Instant. I hope that this small sum may be allowed.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PONANY,
5th January, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 4th October, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer,

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I omitted to mention in transmitting Form B for District No. 1, that the funeral expenses of the late Inspector Capell (Rupees 9) is, strictly speaking, a charge which the

Company have nothing to do with, but it appeared to me that dying in our Service, no one would object to the Company relieving his Widow and family to the small extent entered into this account.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT.
Consulting Engineer's Office.

No. 102.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways,

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In the construction account forwarded with your letter of the 28th September 1853, I find that several of the items of labour have been calculated for the unit of a Month's pay instead of a day according to the instructions conveyed in my letter of the 30th July 1853.

I shall not return these papers for correction, because, I am unwilling to delay further the submission of these accounts to Government; but I beg that in all future accounts forwarded by you for submission to Government, this point may be attended to.

In the account for District No. 2, I find that Rupees 493-5-8 was expended upon temporary Bungalows, making a sum expended upon the same work from the commencement of Rupees 630-12-3.

Before submitting these accounts to Government, I beg to be informed of the present state of the temporary Bungalows on District No. 2, and the probable expenditure still required to complete them.

I beg also to call your attention to the circumstance of there being no voucher in support of the following entries :—

Miscellaneous labour and Bandy Hire, ...	41	14	10
Doors and Windows, ...	295	0	0

Should it happen that these Bungalows have been built in any respect different from the plans forwarded by you on the 21st April, I request to be favored with sketches showing in what that difference consists.

I request also that I may be favored with some explanation of an entry of 100,550 unburnt bricks, apparently charged at the unusual high price of 45 Rupees per lac.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
12th October 1853.

MADRAS RAILWAY AGENCY OFFICE,
26th October, 1853.

No. 182.

FROM E. SMALLEY, ESQUIRE,
Agent,

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to your letter of the 12th Instant, No. 102, I have the honor to transmit copy of a letter from the Chief Resident Engineer in regard to the Bungalows in District No. 2.

25th October, 1853.

2. Deducting the probable cost of the two additional Bungalows at Acracoopum the expense of the three Bungalows originally proposed to be built will amount, according to the statement now submitted by Mr. Wilson, to Rupees 1,321-11-8. The sum sanctioned was Rupees 750.

3. There will be doubtless on the part of the Government, as well as of the Board of Directors a desire to act liberally towards the Servants of the Railway Company, and as far as possible to aid in affording them comfortable accommodation; but there must be a limit to expense, and it is very desirable that no charge should be incurred without sanction. It would be well, I think, at the commencement of our great work to have such expenses clearly defined, or as the line progresses there may be a greater outlay of money than is really required, and delay in bringing Accounts to a close.

4. I may take this opportunity of bringing to your notice that I am not able to close my Accounts for July to be forwarded to England, until the Statements for that month are sanctioned.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP PONANY,
5th January, 1855.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
Madras, 25th October, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer,

TO E. SMALLEY, ESQUIRE,
Agent.

SIR,

1. I have now the honor of sending an Estimate of the several Bungalows built on District No. 2, showing what has been spent on each and what probably will require to be spent.

2. Mr. Wilson has made some additions to his Bungalow, as will be seen by the tracing which accompanies this letter. The whole of the increased cost is not however due to the alterations, but has in part been occasioned by the clay used for the mud walls having proved unfit for the purpose, and the Bungalow had ultimately to be built with sun dried bricks.

3. A Bungalow and Surgery are being built for the Apothecary at the Cortillear; the tracing shows the accommodation provided. He is a man with a large family.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
31*st October*, 1853.

No. 186.

FROM E. SMALLEY, ESQUIRE,
Agent,

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit for sanction the Construction Accounts for the past month.

District No. 1.

Earthwork,	3487	5	2			
Brickwork and Masonry,	6420	5	1			
Permanent Way,	256	0	0			
Miscellaneous,	1608	3	0			
				11,771	13	3

District No. 2.

Earthwork,	370	2	0			
Brickwork and Masonry,	2877	5	8			
Miscellaneous,	364	13	4			
				3612	5	0
			Rupees..	15,384	2	3

2. Mr. Bruce in his letter dated 22d October, 1853, (a copy of which is herewith sent) states the reason why the monthly pay was not reduced to daily rates in the account herewith forwarded.

3. The progress Reports Form E of the two Districts for the past month also accompany the Accounts.

4. You will observe the Construction Account and the Progress Report of District No. 1, contain certain alterations in red ink. Certain errors having been detected in my Office the Accounts were returned to Mr. Bruce for correction. He has made the necessary alterations, but has not sent a fair copy and it being late in the Month and to prevent further delay I forward the Accounts as received.

5. In the previous Construction Account of District No. 1, and Progress Report for August, you will perceive that under the head Earthwork 3090 Cubic yards were entered opposite the 16th Mile, which ought to be the 17th Mile, which I have ascertained is the correct one.

6. I have requested the Chief Resident Engineer to explain the very great delay and want of care observable in the Statements forwarded by the Resident Engineer of the District No. 1. If the work is not measured correctly how can it be ascertained that the payments have been correct? The only Statement requiring more than ordinary care is Form D, and it is hardly admitting of excuse that Form E has been prepared and forwarded with much delay and so many mistakes by Mr. MacNair. At first some allowance was made for errors, but after many month's experience the present result is far from satisfactory.

7. In the Progress Report or Form E, of District No. 2, for September, Mr. Bruce in his remarks says "the Bungalow Account includes two Bungalows more than are included in the original indent." This expense should have been applied for and obtained the sanction of Government. No building, however it may appear necessary, should be constructed without authority. The regular mode of conducting business should, I think,

be observed in the matters of the Railway, or we shall get into confusion, and a lax system. This at least is my opinion, but I do not know whether the Government may be of opinion that a certain latitude must be allowed to the Chief Resident Engineer.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP PONANY,
5th January, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 22d October, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to send the Form D, or Construction Account of the 1st District with a Duplicate.

The progress Report Form E, will be forwarded to you on Monday.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

P. S.—Mr. McNair has misunderstood my instructions regarding calculating the Monthly Pay by daily rates, but it will in future be calculated as desired.

(Signed) G. B. B.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On letters from the Agent of the Madras Railway Company, Nos. 168, 182, *and* 186, *dated* 6*th*, 26*th and* 31*st October* 1853, *respectively.*

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent submits (with reports of progress) the Accounts of expenditure upon the Railway during the month of September, amounting in the aggregate to Rupees 15,803-5-2, viz :

Expenditure in September.	Contingent Expenses,......................	Rups.	419	2	11
	Construction Account,...................	„	15,384	2	3
		„	15,803	5	2

2. The expenditure on Contingencies has been as follows :—

FORM B.

General Superintendence.

General Superintendence.

Surveying, ...	Rups.	211	9	8
Contingencies, ...	„	155	14	0
	Total Rs..	367	7	8

3. The only objections that occur to me to these charges are to be found in an entry of "Sundry Coolies," a practice that should be altogether got rid of, if the detailed accounts are kept in proper form : and in the entry of certain office servants on monthly pay under the head of "Contingent Expenses." I have requested that the practice be discontinued ; and would recommend these Accounts be passed.

Special Superintendence. (Form B.)

Special Superintendence District 1.

District No. 1, ... Total Rs. 24 0 0

I find no objection to this, the "horse allowance" having been sanctioned by Government.

Special Superintendence. (B.)

District 2.

District No. 2, ... Total Rs. 27 11 3

4. These charges appear also unobjectionable.

Construction Account.

District No. 1.

Earthwork, ... Rupees 3,847 5 2

Progress during the month. (E.)

Cubic yards 78,841 or nearly at the rate of 80 yards the pagoda which is satisfactory.

Brickwork and Masonry.

Brickwork.

Total Rupees. 6,420-5-1.

5. For this has been executed cubic yards of Masonry 1120 5/12, which at the estimate rate of 3-14 per yard, amounts to about Rupees 4,340.

6. There remains the difference of Rupees 2,080 to be accounted for, in the making of bricks and collection of other materials to which allusion is made in Mr. Bruce's Note appended to the Progress Report.* The total estimated cost of brickwork, &c., on this District was Rupees 46,946, the quantity of work provided for 8,890 yards. The total quantity executed up to the end of September is 2,224 yards and the total expenditure Rupees 16,977-9-11. The actual value of the Masonry thus completed would be according to the estimate nearly Rupees 11,736½ leaving something more than Rupees 5,000 as expended in materials, bricks, lime, &c., upon extra work which has been found necessary, as the concrete in foundations, &c.

* (E.)

7. Of the total amount, Rupees 16,977-9-11, thus expended upon brickwork, up to the end of September, Rupees 8,410-10-2, had been expended in the manufacture of bricks, of which the outturn reported is 18,20,183 "moulded" and 14,33,000 burnt: allowing the usual price charged for the bricks "moulded only" to be 45 Rupees per lac, this would bring the cost of the burnt bricks to Rupees 5¾ per 1,000 nearly. These bricks are larger than those in common use on Government works in the proportion of four to

three nearly; and they are of superior quality: but their cost has been too great. The excess is to be attributed to an anxiety to get on, in the beginning of the undertaking, to losses in bad weather, and perhaps in some measure to inexperience on the part of many of the people first employed.

8. There should have been, according to the accounts, on the 30th September about eight lacs of these bricks in hand, allowing six lacs to have been used up: which at their cost price would stand at a value of 8 × 575 = Rupees 4,600. There will be other materials collected and much of that portion of the work executed which comes under the head of "Contingencies" and the greater portion of which is expended at the earlier stages of a work; and upon the whole I am disposed to think that the brick work upon this District will be ultimately brought within the estimate. Moreover the work done in this Section of the line may be expected to give compensation hereafter, for any excess that may appear, in the experience which the Engineers will have gathered from it: and which is now in course of application upon other parts of the line. I shall lay before Government hereafter a report of the progress up to the end of the current year with an analysis of the expenditure up to that period upon the several portions of the work: and I think, the work having commenced in June last, a period of six months not too much to allow, before striking an average rate from the total expenditure in the several departments of work.

9. I have thought it right to enter on this occasion thus far into the subject, because the discrepancy between the expenditure on brick work and the Progress Report is sufficiently striking to call for some notice.

Permanent Way

10. The next expenditure to be noticed in this District is "Permanent Way" Rupees 256. This is for collecting blocks to be applied, experimentally, in lieu of sleepers—the expenditure appears unobjectionable.

11. Under the head of Miscellaneous is entered an expenditure on "Bungalows" Rupees 89-15-0. Of this the greater portion, viz., Rupees 60, is for a Sub-Inspector's Bungalow not previously sanctioned; but necessary in my opinion, for the European employed in that capacity. The amount is moderate but the attention of the agent might be called to the orders of Government—though issued subsequent to this expenditure—prohibiting charges of sums in the lump for Bungalows. The balance spent in Bungalows is Rupees 29-15-0, the unauthorized excess noticed by Government in the above order in the expenditure upon Bungalows being thus much increased. The expenditure was incurred prior to that order warning the Agent that the Government would not pass any similar excess in future. The undue expenditure upon these temporary Bungalows in District No. 1, has arisen in some degree I apprehend from inattention as well as inexperience on the part of the Resident Engineer; but much more from the novelty of the position in which all parties concerned were placed, in a new country—among strange people—and not yet practically acquainted with prices either of labor or materials. The result has been not that better Bungalows have been built than should have been, but that they are far below the value of the money expended upon them. It remains for the Government to decide whether this additional amount expended on them during September, viz., Rupees 29-15-0, should be sanctioned. I would suggest that under the above circumstances and with the order of Government upon the subject for the Agents future guidance—it might be passed with propriety. The remaining charges in District for September, viz.:

No. 151, 29th Oct. 1853.

No. 151, 29th Oct. 1853.

Workshops,	Rs.	1353	10	9
and Miscellaneous,	"	164	9	3

I would recommend for sanction. The total amount recommended for sanction in the Construction Account of this district is Rupees 11,771-13-3.

Construction Account, District No. 2.

The charges are as follows:—

Earthwork, - - - - - - - - - - - - Rs. 370 2 0

12. The work reported done is cubic yards 9031½ and the rate consequently upwards of 80 yards to the pagoda. The expenditure is therefore unobjectionable.

13. "*Brickwork and Masonry.*" Expended during the month Rupees 2,877-5-8. Of this Rupees 699-2-8 is in making bricks—the outturn of which is satisfactory. The remainder of the expenditure, viz. Rupees 2,178-3-0, is due to the bridge on the Cortilliaur, on which some progress has been made and much material collected; and also to certain minor works. Mr. Bruce has not been able to furnish an exact report of progress; but I do not hesitate to recommend the sanction of this expenditure.

14. The next and only remaining item of importance charged to District No. 2, is that of Rupees 347-4-8 for Bungalows. The total expenditure upon these Bungalows up to the 30th of September becomes thus Rupees 978-0-11, the amount sanctioned* was Rupees 750, viz. Rupees 350 for the Engineers and 400 for two Inspectors.

* Extract Minutes of Consultation 151, 20th Oct.

15. It will be seen by the Agent's letter of the 26th October 1853, No. 182 and its enclosures, that a still further excess has occurred since that date and that Mr. Bruce explains it partly by an accident to the Engineer's Bungalow at the outset, and partly by the necessity of constructing two additional Bungalows for the Apothecary, and the Sub-Inspector, on the bridge.

16. I admit the necessity of building the Bungalows for these two Subordinates, though it would have been proper for application to have been previously made. Should the Government sanction these two additional Bungalows at a cost of Rupees 150 each, the total amount sanctioned will amount to 750 + 300 = 1050 Rupees. But, although up to the end of September the sum of Rupees 978 had been expended, it appears from the Memorandum furnished by Mr. Wilson, and forwarded with the Agent's letter No. 182, that Rupees 1,251-10-7 had been expended up to the date of that report; and that Rupees 340 was considered as the probable amount of further expenditure. Of this the Engineer's Bungalow alone will, with the doors, &c., cost not less than Rupees 900, the sanction being for Rupees 350. No satisfactory explanation of this excess is given. It seems, however, that the Engineer's Bungalow in District No. 2, has been constructed upon a scale larger than that originally submitted by the Agent for the sanction of Government. This unauthorized proceeding is however not sufficient to account for the difference in the expenditure upon the Engineer's house, and the Apothecary's, both being nearly the same size—both larger than they need be—the Engineer's estimated to cost, when completed, exclusive of doors and windows, Rupees 777-6-9—the Apothecary's Rupees 187-5-7.

26th October 1853.

17. I applied to the Agent in a letter dated 2d December, 1853, No. 139, for further explanation upon this subject. It appears not desirable that the Monthly Accounts should be longer delayed on this account: and I would recommend that, pending the receipt of this explanation, and further consideration of the subject, the sanction of Government be given to the expenditure upon District No. 2, for the month of September with the exception of the Bungalows, *i. e.* in the Construction Account, Rupees 3612-5-0, Rs. 347-4-8 = Rupees 3,265-0-4.

18. The total amount which I have thus recommended be passed to the credit of the Railway Company, as expenditure during the month of September becomes—

Rupees	15803	5	2	less by
Rupees	347	4	8	or
Rupees	15456	0	6	

19. I would beg, on this occasion, to solicit the attention of Government to the want of promptitude on the part of the Agent in furnishing the explanation required respecting these Accounts: and I would submit for consideration the propriety of fixing some period beyond which, should the Accounts remain unexplained, and therefore unsanctioned, no further advance will be authorized.

20. I see no reason why the whole of the Accounts should not, under ordinary circumstances, be before Government within two months; and I consider four months the utmost limit that should be allowed.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PONANY,
5th January, 1854.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
10*th November,* 1853.

No. 200.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS. C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit for sanction the undermentioned Accounts of Contingent Expenses incurred in the Engineer Department during the past month.

	RS.	A.	P.
General Superintendence, - - - - - -	1,813	8	8
Special Superintendence, District No. 1, - - -	145	2	0
Do. do. District No. 2, - - - -	19	12	0
Total..	1,978	6	8

2. In the account of General Superintendence I observe a sum of Rupees 42 entered on account of two sets of Mathematical Instruments and one Map of India purchased of Mr. J. Higginbotham. These articles when needed should have been applied for by the Chief Resident Engineer, and I would have procured and supplied them. At any rate they must be entered ultimately in the Return of Stores of the Engineer Department.

Vide Mr. Higginbotham's bill for Rs 41.

3. I also observe Rs. 16 for four Runners and Rupees 12 for three Runners entered respectively in Districts No. 1 and 2. These men appear to be employed for the purpose of carrying letters, and I think should be brought on the temporary establishment of the respective districts. The charge is not strictly Contingent.

I have the honor to be,
Sir,
Your most obedient Servant,
E. SMALLEY,
Agent.

Submitted (with observations) for the Sanction of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PONANY,
6th January, 1854.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 22d November, 1855.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to forward to you Form D. with duplicate for District No. 1, for October.

It appears that there had been some bricks and chunam accidentally placed to the wrong bridges in the last Account; this has now been adjusted and carefully examined, and as the error does not affect the total sum of money paid for bridges, this being quite correct, I have made the alterations in what I believe to be the simplest and best way, by merely adjusting the red figures to what they ought to be.

I also forward to you Forms C, F and G for August last with duplicates.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
25*th November,* 1853.

No. 207.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to paras 10 and 11 of your letter, dated the 14th November, No. 119, I have the honor to retransmit the Contingent Account of General Superintendence for the month of October, with the item, of Rupees 4-4-6, struck out by Mr. Bruce, who states it to have been "inadvertantly entered in it."

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PONANY,
6th January, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 26th November, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to return Forms E and D for District No. 1.

The red ink total of Maistrees and others are purposely omitted, their insertion serves no purpose and increases the liability to error.

The one Maistry entered at Rupees 35 a month was a payment made in the previous month before the new system was adopted, and to enter it at daily rate would cause a slight error in the Accounts.

I explained, when forwarding Form D, that there was a change in the previous quantity of materials (as bricks and chunam) entered for the Canal Bridge and the others respectively. The totals were correct, but too large a share was entered as used at the Canal Bridge, and too few to the others. The two balanced each other, and the simplest way of adjusting it was to enter the red figures as they should have been.

As the red figures showing the work done previously, are of no use to any one, but myself, I shall in future not enter them in the Account, with the exception of those in the money column which are essential.

Extra Engineer's Bungalow.

I allowed Mr. MacNair Rupees 60 towards building a small Bungalow near the west end of his line to enable him more readily to superintend his work. This is one of those "Contingencies" for which I have entered Rupees 15,034-8-0 in the Estimate of the Section.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
28th November, 1853.

No. 210.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

22d and 26th November 1853.

1. I have the honor to submit for sanction the Construction Accounts of the past month, together with copies of two communications from the Chief Resident Engineer, offering explanation on certain points.

	RS. A. P.
District No. 1,	9,867 10 1
District No. 2,	6,912 7 11
	16,780 2 0

2. With reference to the Rules regarding Tent Allowance and to the orders of Government regarding Bungalows, I am of opinion that the sum of Rupees 60 expended on account of a small Bungalow for Mr. MacNair, should not have been allowed by the Chief Resident Engineer. The amount in this case is not large, but it is the principle of not incurring unauthorized expenses for which I would contend, and I do not think the item comes within the meaning of Contingencies.

3. The progress Reports of the two Districts are also herewith forwarded.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submited (with observations) for the sanction of Government.

CAMP PONANY, *6th January*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

On letters from the Agent of the Madras Railway Company, No. 200, 207 *and* 210, *dated* 10*th* 2*d and* 28*th November* 1853 *respectively.*

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent submits for sanction the Accounts of expenditure upon the Railway during the month of October, as follows:—

Engineer's Department.

	RS.	A.	P.
General Superintendence (B) and Surveying,	1809	4	2
Special Superintendence, District No. 1,	145	2	0
,, ,, ,, ,, 2,	19	12	0
Construction Account, ,, ,, 1,	9867	10	1
,, ,, ,, ,, 2,	6912	7	11
Total Rupees..	18754	4	2

2. I would recommend the three first Accounts (B) for sanction.

1st District Earthwork.

The Construction Accounts in District No. 1, consists of the following items of expenditure.

1st. Earthwork . . . . Rupees 3588-0-4.

Work Done. (Form E.)

Cubic yards 80,263, being at the rate of about 78 yards for Rupees 3-8-0 which is satisfactory.

2d. Brickwork,	6014	10	1
Thus subdivided.			
Work actually done,	4465	1	3
In the Brickfields,	1549	8	10

The work done (E.) was Cubic yards 1239$\frac{7}{12}$. The bricks made were, about two and a half lacks moulded and about four lacks burnt. Allowing the half a Rupee per thousand, the moulding would amount to 112 Rupees and the remainder (1550—112) Rupees 1,428, would be the expenditure against four lacks of bricks burnt, giving three and a half Rupees as the price of burning alone. The cost of the bricks made by the Company hitherto, has been high, but as I have before explained, they were made under disadvantages and the expense will, it may be hoped, be gradually diminished.

Permanent Way.

3d. Permanent Way, Rupees 131-1-6, chiefly for laterite blocks.

4th. Fencing and Miscellaneous, including a small Bungalow for the Engineer, Rupees 133-14-2.

The small Bungalow is needed, one Bungalow was built in the middle of the District and if the Engineers are not to draw Tent Allowance, another small quarter is required at each end of his District. Mr. Bruce has charged Rs. 60 for one such : and would not have received the Government order upon this subject at that time, I would recommend that this be therefore sanctioned.

Extract from Minutes of Consultation, No. 151, 29th October, 1853.

District No. 2, Construction.

District No. 2.

Construction Account, ... Rs. 6,912 7 11

As follows :—

Earthwork.

Earthwork,.. Rs. 622 12 7

3. Progress (E.) Cubic yards 14,214½ or about 80 yards for Rupees 3-8-0. The cost is low, but the progress is bad. I have reason to believe that better progress has been since and is now being made upon this District.

Brickwork.

Brickwork and Masonry,.......... .... Rs. 5,808 13 4

Of which are the following :—

Cortilliaur Bridge,.........	Rs.	3,083	3	8
Minor Works, Drains, &c.,..	„	1,573	2	10
Brickfields,................	„	252	6	10
Total Rs...		5,808	13	4

4. The actual progress made in the work of Masonry during the month (E.) is small,* 481 Cubic yards; but a large quantity of materials have been led to the Cortilliaur Bridge; and the work promises to go on well. The bricks have been made at a similar cost in this District, having amounted up to this time to five and a half lacs (about) moulded and four and a half lacs, burnt at an expenditure of Rs. 2016.

This brings the price of burning to 3½ Rupees per 1000, the total price to about 4 Rs. but they are large sized bricks.

Bungalow,........ ....Rs. 480 14 0

For the reasons given in my report of the 5th Instant, I would recommend that this item be not passed ; until a full explanation has been furnished of the great excess in the expenditure upon these temporary Bungalows over that which was sanctioned.

5. With this exception, therefore, I would recommend that these Accounts be sanctioned to the extent of Rs. 18,754-4-2—480-14-0 or Rs 18,273-6-2.

Rupees Eighteen thousand two hundred and seventy-three, Annas six and Pice two.

6. The progress during the month of October was on District No. 2, unsatisfactory. I believe the next month will show a better state of things in this respect.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PONANY,
6th January, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 41.

Extract from the Minutes of Consultation, dated 17*th February*, 1854.

Read the following letters from Major T. T. Pears, C. B., Consulting Engineer for Railways.

(Here enter 5th and 6th January 1854, Nos. 18 and 19.)

Para. 1. With the foregoing Correspondence the Consulting Engineer submits with his observations the Accounts of expenditure upon the Railway, during the months of September and October last, under the following heads:—

In September.

Contingent Expenses,..................................	Rs.	419	2	11
Construction Account,..............................	,,	15,384	2	3
Rupees......		15,803	5	2

In October.

Contingent Expenses,..................................	Rs.	1974	2	2
Construction Account,..............................	,,	16,780	2	0
Rupees......		18,754	4	2

2. The delay which has occurred in furnishing these Accounts and the explanation required respecting them should be obviated in future by some better arrangement than appears now to exist, and as it is very desirable that the Accounts should be punctually rendered and any information needed by the Consulting Engineer promptly afforded, the Right Honorable the Governor in Council concurs with that Officer that under ordinary circumstances they should be laid before Government, or at least the Consulting Engineer within two months of the period for which they are due, and that four months should be allowed as the utmost limit.

3. The Government consider the cost of Bricks, which is noticed in paras 7 to 9 of Major Pears' remarks on the Accounts for September, and para. 2 of those on the Accounts for October, to be very high—but as the Consulting Engineer still expects that on the whole the Estimate of Bricks will not be exceeded, they request that he will particularly refer to the charge on this Account as well as to the quality of the Bricks when reporting on the completion of the entire line through District.

4. The Government agree with the Agent in the remarks contained in para. 7 of his letter to Major Pears' address, of the 31st October last, respecting the Bungalows constructed without authority, and in the observations of the Consulting Engineer on the charge of 60 Rupees for a Sub-Inspector's Bungalow not previously sanctioned. The charge is moderate, but it is the principle of erecting such buildings without previous sanction, that is objected to, and there was no great urgency that should have justified to complete a departure from the ordinary practice in such cases.

5. The great excess in the expenditure on the other Bungalows over the sanctioned Estimate will require the fullest explanation, for which Major Pears has applied to the Agent and which will be separately submitted. A plan of Mr. Wilson's Bungalow, as it is when completed, should be furnished with the explanation—the building is stated to have been constructed upon a scale larger than that originally submitted by the Agent for the sanction of Government, and full explanation should be also required of this unauthorized proceeding. In the meantime the Government will omit the charges on the above Account from their present sanction as properly proposed by Major Pears.

6. The Government had on a former occasion noticed the irregular entry under the head of "Contingent Expenses" of items not properly belonging thereto. The entry under this head of disbursements on account of certain office servants on monthly pay should be discontinued, and other similar irregularities carefully avoided in future.

7. Upon the whole the Consulting Engineer reports that the progress on one Division is satisfactory, and on the other unsatisfactory. The Government await the receipt of the reports for November and December before making any remarks on the latter.

8. The Consulting Engineer will immediately call upon the Agent to state when the Accounts for November will be furnished, and urge on him to adopt measures for the regular transmission of these Accounts in future. Major Pears will state whether any inconvenience is likely to arise from the Accounts being submitted quarterly instead of monthly, for the sanction of Government, and whether, should he see no objection to it, the arrangement might be adopted from the commencement of this year.

9. With these remarks the Governor in Council sanctions the Statements of Expenditure upon the Railway for the months of September and October last, to the extent recommended by the Consulting Engineer, amounting in the aggregate to Rupees (33,729-6-8) Thirty-three thousand, seven hundred and twenty-nine, Annas six and pice eight, viz. :—

September,....................................	Rs.	15,083	5	2
Deduct Expenditure on Bungalows,....................	,,	347	4	8
Rupees...		15,456	0	6
October,..	Rs.	18,754	4	2
Deduct Expenditure on Bungalows,....................	,,	480	14	0
Rupees..		18,273	6	2
Total Rupees..		33,729	6	8

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 21.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

17th February, 1854, No. 41.

I have the honor to forward copy of an Extract from Minutes of Consultation, as per Margin, to inform you that you are authorized to take credit in the Accounts of the Railway Company in the Engineer Department for the following sums, expended during the months of September and October, 1853.

September 1853.

	RS.	A.	P.
General Superintendence, including Work Shops,....................	367	7	8

District No. 1.

	Rs.	A.	P.
Special Superintendence,..	24	0	0
Construction Account, Earthwork,..	3487	5	2
Brickwork, &c.,..	6420	5	1
Permanent Way,..	256	0	0
Miscellaneous,..	1608	3	0
Total on District No. 1, Rs....	11,795	13	3

District No. 2.

	Rs.	A.	P.
Special Superintendence,..	27	11	3
Construction Account, Earthwork,..	370	2	0
Brickwork,..	2877	5	8
Miscellaneous,..	17	8	8
Total on District No. 2, Rs..	3292	11	7

For October 1853.

GENERAL SUPERINTENDENCE.

	Rs.	A.	P.
Surveying,..	220	0	6
Contingencies,..	351	13	2
Workshop,..	1237	6	6
Total Rs...	1809	4	2

District No. 1.

	Rs.	A.	P.	Rs.	A.	P.
Special Superintendence,..				145	2	0
Construction Account.						
Earthwork,..	3588	0	4			
Masonry,..	6014	10	1			
Permanent Way,..	131	1	6			
Fencing,..	6	12	0			
Miscellaneous,..	127	2	2			
				9867	10	1
Total on District No. 1, Rs.				100	12	1

District No. 2.

SPECIAL SUPERINTENDENCE.

	Rs.	A.	P.	Rs.	A.	P.
Contingent Charges,..				19	12	0
Construction Account.						
Earthwork,..	622	12	7			
Brickwork,..	5808	13	4	6431	9	11
Total on District No. 2, Rs...				6451	5	11

Total of the above to be credited.

	Rs.	A.	P.
For September,..	15,456	0	6
For October,..	18,273	6	2
Total Rs...	33,729	6	8

Rupees Thirty-three thousand seven hundred and twenty-nine, Annas six and pice eight.

You will observe that Government withhold sanction to the expenditure on Bungalows in District No. 2, until full explanation of the subject has been furnished: this explanation was called for in my letter of 2d December last.

The vouchers received with your letters of the 6th October and 10th November 1853, are herewith returned.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
22d February, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 139.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to return the Statement which accompanied your letter of the 30th ultimo, and request your attention to the circumstance of the expenditure for doors and windows, and superintendence being therein entered in the lump, so that the actual sum expended upon the several Bungalows cannot be ascertained from it.

I wish to have it in my power to report to Government upon the actual expenditure on each of the Bungalows up to the end of September, and I request therefore that you will favor me with a revised Statement, allotting to each Bungalow, as nearly as may be, its due portion of the doors and windows and the superintendence.

As Mr. Bruce in his letter of the 25th October, 1853, referred to some unavoidable loss incurred in the destination of a portion of the Engineer's Bungalows shortly after its commencement, I request to be favored with an estimate of the loss so sustained. I shall be glad to be favored with an early reply in order that the September accounts may be submitted to Government without further delay.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
2d December, 1853.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 144.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Referring to my letter of the 2d ultimo to your address, I have the honor to inform you that in handing up to Government the Accounts of Construction for the months

of September and October, it is my intention to recommend that pending the receipt of the explanation called for, the expenditure upon Bungalows in District No. 2, be not passed, and I therefore request you will at your earliest convenience, favor me with such explanation showing the total amount expended upon each Bungalow up to the latest date, and the various causes that have led to the excess over the amount sanctioned.

I have, &c.,

CAMP LUCKUDICOTTAH, 2d January, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
22d February, 1854.

No. 50.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

To Chief Engineer, 9th January 1854, No. 9.
From do. 24th do. do.
To do. 3d. Feby. do. No. 29.
From do. 18th do. do.

1. With reference to your letters of the 2d December 1853, No. 139, and 2d January 1854, No. 144, respecting the expenditure upon Bungalows in District No. 2, I have the honor to transmit for your information copy of a Correspondence with the Chief Engineer on the subject, accompanied by a statement prepared in my Office.

2. The Chief Engineer, you will observe, has not furnished any explanation of the causes of the excess incurred, though called for. As Mr. Wilson has been afforded the opportunity of giving explanation several times, I think it may be fairly inferred that he has none to afford of a satisfactory nature. I have therefore thought it right no longer to defer replying to your letter. The total amount expended to the 31st January on the three Bungalows sanctioned is Rupees 1,399-1-6, from which if Rupees 220 were deducted, being the estimated loss sustained in the Engineer's Bungalow, there yet remains an excess of Rupees 441-15-8 above the amount sanctioned.

	RS.	A.	P.
Inspector's Bungalow, Acaracoopum,	82	14	2
Apothecary's do. Acaracoopum,	37	5	4

3. In Mr. Bruce's letter of the 18th February, two Bungalows are entered as "unsanctioned" though really sanctioned. Vide Min. of Cons. 12th November 1853, No. 158. The reason given for entering them so is their inclusion in the "Contingencies" of the estimate of District 2, which was submitted to you under date the 30th November last, but which has not been sanctioned as yet. To these two Bungalows three others have been added as provided for in the estimate.

4. Under date 12th November last, the Government stated in para. 3, that no Bungalows should be constructed without previous sanction. I do not think that Bungalows without limit (and which where necessary are specially provided for) should be included in Contingencies, but upon this point I should be glad to receive your opinion. Each Engineer has a Bungalow and a Tent with Tent allowance. Each Inspector, Sub-Inspector, and Apothecary is allowed a Bungalow. This seems to me a liberal provision : but whether it be so or not I should be glad to have clear instructions on the subject.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

Madras Railway Agency Office,
9th January, 1854.

No. 9.

From E. SMALLEY, Esquire,
Agent.

To GEORGE B. BRUCE, Esquire,
Chief Resident Engineer.

Sir,

I have the honor to forward copy of a letter from the Consulting Engineer and with reference to his previous letter of the 2d ultimo, a copy of which was transmitted to you on the 3d following, request you will furnish me as soon as practicable with a statement of expenditure on each of the Bungalows in District No. 2, to the latest date, accompanied by an estimate of the loss sustained in the Engineer's Bungalow as requested by Major Pears. Explanation of the excess incurred, you will observe, is also required. Should you have despatched already a revised statement of expenditure to the 30th of September, a supplemental one may be forwarded showing the cost to the latest date.

2d January 1854, No. 141.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Madras Railway,
Coimbatore, 24th January, 1854.

From GEORGE B. BRUCE, Esquire,
Chief Engineer.

To EDWARD SMALLEY, Esquire,
Agent.

Sir,

The cost of doors and windows in the Bungalows for which Government sanction was originally received on District 2, is as follows:—

			RS.	A.	P.
Engineer's Bungalow,			121	0	0
Inspector's	do.	at Cadmatore,	87	0	0
Do.	do.	at Arcconum,	87	0	0
		Rs.	295	0	0

Into the Engineer's Bungalow have been put some doors and windows intended ultimately for the station, and those made for that Bungalow have been used in the extra Bungalows required, but the most simple way to consider it is not to regard this in the calculations.

The expense incurred in consequence of the rain destroying the walls was, I am informed, by Mr. Wilson, Rupees 220.

I trust that this question will be met liberally and that the same consideration for the circumstances in which the Engineer was placed as a perfect stranger will be shown as was done in District No. 1.

I would not again advocate the allowance of the smallest excess above the estimate, because the matter is now so fully understood and the wood work can be done for so much less, that there will be no excuse for it.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY AGENCY OFFICE,
3d *February*, 1854.

No. 29.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

I have the honor to acknowledge the receipt of your letter of the 24th January regarding the Bungalows in District No. 2. The proportion of doors and windows only has been shown, but not also that of superintendence as requested by Major Pears. You have also omitted to furnish a statement of the "total amount expended upon each Bungalow to the latest date," you will be good enough again to refer to Major Pears' letter of the 2d December 1853, No. 139, and to that of the 2d January 1854, No. 144, also to my letter of the 9th January, No. 9. The Construction Accounts forwarded by you do not exhibit the amount expended on each Bungalow, so that the information needed cannot be prepared in this office.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 18*th February*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to submit a statement drawn up by Mr. Wilson, showing the cost upon Bungalows on District 2, up to 31st January 1854.

Sanctioned Bungalows.

	RS.	A.	P.
Engineer's Bungalow at Chinamapett,	813	12	1
Inspector's do. Cudamatoor,	97	1	10
Do. do Arconum,	193	3	7
Company's Rupees...	1,104	1	6

To the above is to be added Rupees 295 in the proportion stated in my letter of January 24th.

Unsanctioned Bungalows.

Included with the Contingencies of the Estimate for District No. 2.

	RS.	A.	P.
Inspector's Bungalow, Acracoopum,	82	14	2
Do. Office,	19	5	6
Do. Store-room,	2	15	3
Sub-Inspector's Bungalow, Mossoor,	71	13	3
Apothecary's do. Acracoopum,	37	5	4
Company's Rupees...	214	5	6

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

Statement showing the Cost, &c. of the undermentioned Bungalows in District No. 2, up to 31st January, 1854.

				Excess.
Engineer's Bungalow,......	813 12 1			
Cost of Doors and Windows...	121 0 0			
		934 12 1		
Deduct Estimated Loss....		220 0 0		
			714 12 1	
„ Amount Sanctioned....			350 0 0	
				364 12 1
Inspector's Bungalow....	193 3 7			
Cost of Doors and Windows...	87 0 0			
		280 3 7	280 3 7	
Deduct amount Sanctioned....			200 0 0	
				80 3 7
Inspector's Bungalow,....	97 1 10			
Cost of Doors and Windows...	87 0 0			
		184 1 10		
		1399 1 6		444 15 8

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
28th February, 1854.

No. 59.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR.

With reference to my letter of the 22d Instant, No. 50, on the subject of the expenditure upon Bungalows in District No. 2, I have the honor to transmit for your information copy of a letter from the Chief Engineer, dated 27th Instant, founded on the Minutes of Consultation, dated 17th Instant, Para. 4.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 27th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to draw your attention to Para. 4, of the Minutes of Council.

The erection of extra Bungalows for Engineers or Inspectors is a contingent work covered in the estimate under the head of Contingencies, and just in the same way as

we build a shed for chunam without special sanction, we build one a little better for an Inspector; all being included in the sanctioned estimate.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 19.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

Letter from the Agent, No 50, dated 22d February 1854, with copies of Letters from Mr. Bruce, No. 9, dated 9th and 24th January and 3d and 18th February 1854, and a statement showing the cost of Bungalows in District No. 2.

Do from the Agent No. 59, dated 28th February with copy of Letter from Mr. Bruce, dated 27th February.

Extract from Minutes of Consultation No. 25 and 158, dated 5th May and 12th November, 1853.

1. I have the honor to submit for the information of Government and with reference to the last para. of my Report of the 28th Ultimo, a statement showing the expenditure which has been incurred in District No. 2, of the Madras Railway upon temporary Bungalows.

2. The buildings of this description which had been constructed either wholly or in part up to the 31st January, were seven in number, besides one Inspector's Store Room.

These seven received at various times the sanction of Government.

3. A third Inspector's Bungalow on this District is rendered necessary from the circumstance of the man's presence being much required at the Cortilliaur Bridge, though it is not the Head Quarters of his Section.

4. It will be observed that there is an excess over the sanctioned amount in two cases. In one, that of the Engineer's Bungalow, the expenditure has been Rupees 934-12-1 against a sanction of Rupees 350, showing an excess of Rupees 584-12-1. Of this credit is claimed by the Resident Engineer for Rupees 220, as the estimated value of damage done by rain. This would leave Rupees 364-12-1, as the sum expended without authority or excuse.

5. The other building in which there is excess is an Inspector's; the excess upon which, unexplained, has been Rupees 80-3-7.

6. Upon the receipt of information thus unsatisfactory regarding these Bungalows, I considered it my duty to address the Agent on the 27th October 1854, No. 111, and request all further expenditure upon them might be discontinued until further orders, the remaining Bungalows, the expenditure of which fall short of the sum allowed, are probably therefore unfinished.

July,	137	6	7
August,	593	5	8

* Vide Extract Minutes of Consultation, No. 151 and 158, dated 29th October and 12th November 1853.

7. The total sum for Bungalows charged in the Monthly Accounts for 1853, amounts to Rupees 1,601-15-7, of which* Rupees 630-12-3, has received the sanction of Government. There remains the sum of Rupees 971-3-4, reserved from consideration

Mr. Bruce in his Letter to the Agent of the 24th January thus writes:—

"I trust that this question will be met liberally and that the same consideration for the circumstances in which the Engineer was placed as a perfect stranger, will be shown as was done in District No. 1."

"I would not again advocate the allowance of the smallest excess above the Estimate, because the matter is now so fully understood and the woodwork can be done for so much less that there will be no excuse for it."

8. There was much of ignorance of the country and bad mangement in the large expenditure on the Bungalow in the 1st District, and there may have been the same in that of the 2d District, but Mr. Wilson thought proper, whether with the Chief Engineer's cognizance or not does not appear, to build a Bungalow of an unnecessary size, and even larger than the plan orginally proposed by Mr. Bruce. I should not be inclined in any case to advocate this system of insisting absolute agreement with an Estimate. On the average of many cases, we shall generally find, or ought to find, the expenditure approximate pretty closely to the Estimate. It will occasionally exceed it in some, and it will fall short in others.

9. Taking all the circumstance of this case into consideration, and giving due weight to Mr. Bruce's observations that the Engineers were perfect strangers, I would recommend that Rs. 220, the estimated loss by rain be allowed; that the excess of Rs. 82-14-2 in the Inspector's Bungalow be on this occasion allowed; but that the sum of Rs. 364-12-1 being a further excess on the Engineer's Bungalow be disallowed.

10. Should the Government approve of this the Agent should be empowered to enter in his next Monthly Accounts the sum of (971-3-4—364-12-1), Rs. 606-7-3, expended on account of Bungalows, and this sum will be then passed to his credit in due course.

11. In the statement of sums expended furnished by Mr. Bruce and brought up to the 31st of January, there is an excess of Rs. 11-7-5 over the amount above given; but this appears to have been expended in January upon a Store Room, the account of which is given in From D of that month and has been already passed.

I have, &c.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS, 26*th April*, 1854.

Bungalows in District No. 2.

DESCRIPTION OF BUNGALOW.	*Amount Sanctioned.*	*Date of Sanction.*	*Expended.*			*Estimated Loss.*			*Total Credit.*			*Excess.*			*Less.*		
Engineer,	350	5th May	931	12	1	220	0	0	570	0	0	364	12	1	0	0	0
Inspector,	200	5th May	280	3	7	0	0	0	200	0	0	80	3	7	0	0	0
Ditto	200	5th May	181	1	10	0	0	0	184	1	10	0	0	0	15	14	2
Apothecary,	150	12th Nov.	37	5	4	0	0	0	37	5	4	0	0	0	112	10	8
Sub-Inspector,	150	12th Nov.	71	13	3	0	0	0	71	13	3	0	0	0	78	2	0
Inspector,	......	......	82	14	2	0	0	0	0	0	0	82	14	2	0	0	0
Inspector's Office,	......	......	19	5	6	0	0	0	0	0	0	19	5	6	0	0	0
Inspector's Store-room,	......	......	2	15	3	0	0	0	0	0	0	2	15	3	0	0	0
	1050	......	1613	7	0	220	0	0	1063	4	5	550	2	7	206	11	7

Charges made in Form D.

In July.........	137	6	7	Sanctioned already.
August......	493	5	8	
September.	317	4	8	
October.....	480	14	0	
November..	98	5	1	
December..	44	11	7	
	1601	15	7	

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 108.

Extract from the Minutes of Consultation, dated 16th May, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 26th April 1854, No. 19.)

1. The Government are disposed to consider liberally the excess of expenditure incurred on temporary Bungalows in District No. 2, but observe that Mr. Wilson has never explained his proceedings. Until such explanation be received the extra amount must remain unadjusted.

Estimated loss by Rain, Rs. 220 0 0
Excess in the Inspector's Bungalows, - 82 14 2

2. As recommended by the Consulting Engineer in Paras 9 and 10 of his letter, the two items noted in the Margin are passed, and the Agent of the Railway Company is authorized to enter in his next Monthly Account the sum of Rupees 606-7-3 expended on account of Bungalows, leaving for future adjustment the excess of Rupees 364-12-1 on the Engineer's Bungalow, for the present disallowed.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
22d June, 1854.

No. 207.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

10th June, 1854.

With reference to your letter of 18th May, No. 102, I have the honor to forward copy of a letter from the Chief Engineer, enclosing the reply of Mr. Wilson, explanatory of the excess of cost of his Bungalow.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

Submited (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
26th June, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Vellore, 10*th June*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to annex copy of a letter received from A. Wilson, Esq. in reply to one from Major T. T. Pears, C. B., Consulting Engineer, and copy of Extract of Minutes of Consultation which accompanied it.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY, RESIDENT ENGINEER'S OFFICE,
Camp Cotpauk, 31*st May*, 1854.

FROM ALLAN WILSON, ESQUIRE,
Resident Engineer.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In answer to your letter of the 26th instant, enclosing one from Major T. T. Pears, C. B., Consulting Engineer for Railways, I beg to state in reply that I found it necessary to have more accomodation in the shape of out-houses than at first intended.

My Bungalow is situated in such an isolated position, that it is near no village of any extent and I found this a great drawback to servants remaining with me, and as you are aware from this very reason, I cannot get a Cashkeeper to remain more than one day.

I would also bring to your notice that when I was in Camp at Arconum in the month of February last, the whole of my out-houses were burnt, these I repaired at my own expense, amounting to something like Rupees 190, besides household articles—taking all these items into consideration, I hope that Government will act in a liberal manner.
Trusting to hear a favorable reply to this letter.

I have, &c.,
(Signed) A. WILSON,
Resident Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

On a letter No. 207 from the Agent of the Madras Railway Company, dated the 22d June 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

No 108, dated 16th May 1854.

With reference to an order of Government, as per margin, the Agent forwards an explanation from Mr. Wilson, the Resident Engineer of District No. 2, regarding the excess of expenditure on his

temporary Bungalow. Mr. Wilson appears to be aware that his proceedings were unauthorized. Should the Government be pleased to overlook the irregularity and pass the expenditure, the balance remaining unadjusted, Rupees 364-12-1, should be entered in the next Construction Account for District No. 2, under the head of Bungalows.

MADRAS, 26th June, 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 153.

Extract from the Minutes of Consultation, dated 4th July, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 26th June 1854.)

Under the explanation now furnished by Mr. Wilson, the Resident Engineer, of his proceedings with respect to the excess of expenditure incurred on his temporary Bungalow, the Right Honorable the Governor in Council is pleased to admit the charge of Rupees (364-12-1) three hundred and sixty-four, Annas twelve and Pie one, remaining unadjusted on that account, and directs that it be entered in the next Construction Account for District No. 2, as suggested by the Consulting Engineer.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
11*th January*, 1854.

No. 10.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit, for sanction, the undermentioned Accounts for the month of November 1853, amounting to Rupees 3,538-1-0, together with a copy of a letter from me to the Chief Resident Engineer and his reply thereto.

10th Dec. 1853, No. 199.
26th do. do.

Contingent Bill of General Superintendence,	- - - - - -	3,320	10	8
Do. Special Superintendence, District No. 1,	- - - -	26	0	0

Contingent Special Superintendence, District No. 2,		153 10 0
Do. do. do. No. 3,		37 12 4
	Company's Rupees...	3538 1 0

I have, &c.,

(Signed) E. SMALLEY,

Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
7th March, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
10th December, 1853.

No. 199.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,
Chief Resident Engineer.

SIR,

In returning the Form A of District No. 2, and B of General Superintendence, on Districts 1, and 2, for the Month of November, I beg to point out certain errors as here under particularized.

1st. In Form A, the date of sanction for "Extra Tentage" instead of 5th November 1853, should be 28th October 1853.

2d. In Form B, a charge of 2 Rupees is made (as per Bill, No. 13,) for four Storm Ropes which, under the orders of the Board of Directors regarding Tents and Tent Allowance is objectionable.

3d. In do. do. Labour as per Muster Roll is entered at Rupees 397-15-11, instead of Rupees 397-15-1, as per Voucher.

4th. In the Muster Roll the rates of the 1st and 2d items are required.

5th. Do. do. the days for the 3 Coolies employed at Rupees 5, 4 and 4, respectively are omitted.

6th. Do. do. the rate and days of the last "Sawyer Account," Rupees 28-15-9 are not shown.

7th. In the Memo. of Articles purchased for the Workshop, a sum of Rupees "223-10-11, Muster Roll for October" is inserted, which has already been charged in the Contingent Bill, Form B, for October.

8th. For the Iron Chest Rupees 40-6-0, charged in Form B, of District No. 2, no Voucher has been received.

9th. In Form B, of District No. 1, Postage Rupees 12 is charged. In reference to the Account of the previous month, Rupees 16 appear entered for four Runners.

Explanation therefore is requested as to whether the amount entered in November's Account was paid for Runners or for Letters posted at the Post Office. If the former the form of entry should be altered. The charge should appear under the head of "Labour," not "Materials." Indeed the Runners might properly be charged as a part of the Temporary Establishment and the amount submitted for sanction.

10th. In Form B of District No. 2, the reason for a "Hospital Cooly" and "Cooly hire" should be explained, and for whose use the Iron Chest therein charged was bought. The Tappal Runners should have been entered under the head of "Labour" not "Materials" and the; and No. and rate which have been omitted supplied.

11. In conclusion, I have to request that when any thing new or extraordinary is in future charged in the Contingent Bills, explanation of the same may be submitted either in a letter or in the Account itself, in a column of "Remarks" which might be added.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Coimbatore, 26th December, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to return Form B, for General Superintendence and Districts 1 and 2, for the month of November.

I shall refer to the paragraphs in your letter according to the number there given.

2d. The charge for Storm Ropes is quite distinct for the "maintenance" of Tents which is required of the Engineers by the Directors; they are as necessary a part of a new Tent as the Pole, I therefore provided them as they are not to be got in the Government Stores.

5th. These are watchmen employed by the month.

6th. This is the sum of a number of Contracts, the detailed statements of which would only swell the accounts without effecting any good purpose.

8th. The Iron Cash Chest was for an Inspector on District No. 2. I have instructed the Storekeeper to forward the Voucher.

9th. The Postage Runners would have been better charged under the head of labour, it shall be altered next month: the charge is for Runners.

10th. An Hospital cooly is to carry Medicines, &c.,

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
1st February, 1854.

No. 27.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR

1. I have the honor to submit for sanction the Contingent Accounts of the Engineer Department for December last, amounting to Rupees 3,011-15-0.

	RS.	A.	P.
General Superintendence,	2,700	11	4
District No. 1,	29	15	4
„ No. 2,	129	0	0
„ No. 3,	108	0	0
„ No. 7,	8	13	0
„ No. 8,	8	13	0
„ No. 14,	8	13	0
„ No. 15,	8	13	0
Total..	3,011	15	0

2. In reference to the charge of Rupees 25 on account of Medical attendance in District No. 2, for June last, Mr. Bruce has explained* that "before the appointment of any Dresser or Apothecary Mr. Wilson had sickness in his Camp" and that he therefore "employed the Apothecary at Tripasore to attend the men.

* 23d January, 1854.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
7th March, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
13th February, 1855.

No. 38.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit for sanction the Construction Accounts of Districts 1 and 2, for November and December 1853, as here under specified.

	November.			*December*.		
	RS.	A.	P.	RS.	A.	P.
District 1,	6687	1	9	11521	13	3
„ 2,	3596	8	8	9905	7	2
Total...	10283	10	2	21427	4	5

2. In the Accounts for District No. 2, for the months in question, two sums of Rupees 98-5-1, and Rupees 44-11-7, are respectively entered on account of Bungalows. The sum of Rupees 750, originally sanctioned for Bungalows in this District having been exceeded at the date of the previous Account, these I infer are a portion of those sanctioned for "Extra Bungalows" on the 12th November last.

From Cons. Engr. 17th Nov. 1853, No. 124.

3. The Accounts of the month of November for both Districts being incorrect were returned for correction on the 4th of January. Owing to some negligence in the Chief Engineer's Office, they were not forwarded to that Officer, and were lying unseen till the 6th of February. Hence much delay has occurred in the submission of these Accounts.

4. The Progress Reports for the two months are also herewith sent.

I have, &c.,

E. SMALLEY,

Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 7th March, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On letters from the Agent of the Madras Railway Company, Nos. 10, 27, *and* 38, *dated* 11*th January,* 1*st and* 13*th February* 1854, *respectively.*

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent submits the Accounts of Expenditure for the months of November and December, amounting to Rupees 38,260-14-7 as follows:—

November.

Contingencies	Rs.	3538	1	0
Construction	„	10283	10	2
Total Rs.		13821	11	2

December.

Contingencies	Rs.	3011	15	0
Construction	„	21427	4	5
Total		24439	3	5
Total on the two Months		38260	14	7

For the Month of November the Contingencies are as follows:—

GENERAL SUPERINTENDENCE.

Surveying	Rs.	40	5	8
Contingencies	„	517	5	11
General Workshop	„	2762	15	1
Total Rupees		3320	10	8

2. The entries in detail have been compared with the vouchers and no objection found.

District No. 1.

SPECIAL SUPERINTENDENCE.

Contingencies	Rs.	26	0	0

This expenditure is unobjectionable.

Construction Account.

District No. 1, Construction. Earthwork.. Rs. 5131 11 10

3. The Report of progress for this month E, shows that 97,817 yards of Earthwork was executed in this District. This is at the rate of 66 yards for three and a half Rupees and is satisfactory: a portion of the amount Rupees 1,435 having been expended in a deep and hard cutting near the village of Umbatore, 10th mile where the rate is above the average.

Brickwork and Masonry. Brickwork and Masonry........................... Rupees 881 4 0

Work done 239 $\frac{6}{24}$ yards, or about Rupees 3-10-10 at the yard.

Permanent* way, Rupees 418-4-6, this is chiefly for Laterite Blocks which will be applied in the first instance experimentally upon a portion of the line in lieu of sleepers.

Miscellaneous... Rs. 225 13 2

Fencing. Fencing.. „ 205 8 8

4. This sum has been expended in sowing and planting permanent hedge. The attention of the Agent will be called to the circumstance of no progress having been reported.

Sundries,.. Rs. 20 4 6

5. The expenditure on District No. 1 as above, amounts to Rupees 6,713-1-6 and I would recommend that the amount be passed to the credit of the Railway Company.

District No 2.

District No. 2.

SPECIAL SUPERINTENDENCE.

Contingent Charges,......... .... Rs. 153 10 0

The charge made in this appears unobjectionable.

Construction Account.

Earthwork. Earthwork,............ .... Rs. 1,947 12 7

6. Work done E, 42,617½ cubic yards or about 76 yards for 3½ Rupees.

Brickwork, &c. Brickwork and Masonry,....................... Rs. 1,536 10 11

7. Work executed 668 cubic yards or about Rupees 2-5-0 per yard—this is cheap, but must be taken merely as an approximation. Materials used one month having been, carried and prepared during a previous month—the real cost of this portion of the work can only be fairly calculated upon considerable periods.

Miscellaneous,...................................... Rs. 111 14 1

Bungalow,.. „ 98 5 1

Bungalows. The expenditure on Bungalows is under consideration and the Agent has forwarded a separate memorandum of the expenditure thereon up to January 31st, which on the receipt of the Accounts for that month will be submitted to Government. This amount had better therefore be struck out.

9. Clearing the line Rupees 13-9-0 may be passed.

10. The total recommended for sanction upon District No. 2, for the Construction Account "during the month of November becomes Rupees 3,596-8-8—Rupees 98-5-1, or Rupees 3,498-3-7, and the total with special superintendence becomes Rupees 3,651-13-7," recommended for sanction.

Total in District No. 2, Rupees 3,651-13-7.

District No. 3.

SPECIAL SUPERINTENDENCE.

Contingent Charges,.. Rs. 37 12 4

The charges are unobjectionable.

In the Construction Account in this District there is no expenditure.

December.

December, General Superintendence, Rs. 2709-11-4.

General Superintendence, and Work Shops,....Rs. 2709 11 4

11. Batta for the Engineering Pupils in the field is charged at Rupees 5 per month for each—this allowance proposed by the Chief Engineer and approved by the Agent under the general sanction conveyed in Extract from the Minutes of Consultation, No. 112, dated 2d September 1853, it seems reasonable. In this account also under "Contingent Expenses" I find one additional Moochee and one Office Lascar.

12. Form A shows in the Chief Engineer's Establishment three Peons and four Lascars and one Moochee. In a letter addressed to the Agent on the 17th of November I wrote as follows—"I beg on this occasion to refer you to my letter of the 14th September 1853, No. 89, and to request that the Contingent Charges may be confined as much as possible to such trifling occasional expenses connected with the Superintendence as cannot conveniently be referred for previous sanction. I cannot consider that the employment, though temporary, of extra servants comes within this category."

13. The practice here referred to is an inconvenient one, and though in the present case, it has only been followed to an inconsiderable extent, so clear an infringement of the above instructions should not have been passed unnoticed by the Agent.

14. The Bill might be passed, but I would recommend that the irregularity be pointed out to the Agent.

District No. 1.

Special Superintendence,.......................... Rs. 29 15 8

The charge appears unobjectionable.

Construction Account.

District No. 1 Earthwork, Rupees 7167-15-8.

Earthwork,..Rs. 7167 15 8

Work reported done E cubic yards 1,54,980½, being at the rate of 75 yards for 3¾ Rupees which is satisfactory.

Brickwork, &c. Rs. 3320-1-9

Brickwork and Masonry,........................ Rs. 3320 1 9

The work done, cubic yards 174, besides expenditure in the brick fields of Rupees 273-2-1, without recorded outturn.

The amount in yards of brickwork executed is very small compared with the expenditure; but a large quantity of materials, as granite, laterite, stones and chunam, appears to have been laid in during the month and charged accordingly.

District No. 1. Permanent Way, Rs. 40-11-0.

Permanent Way,..................................	Rs.	40	11	0
Laterite Blocks,..................................			,,	
Fencing,..	Rs.	967	8	4

17. The temporary Fencing at As. 3-11 per yard, and the labour in planting the permanent hedge are mixed up in this statement.

The Agent will be requested to keep them separate. The charges are unobjectionable. The Miscellaneous charges are Rs. 25-8-6, for clearing the line. The total expenditure on District No. 1, recommended for sanction are—

Miscellaneous, Rs. 25-8-6.

Special Superintendence, (B)........................	Rs.	29	15	8
Construction Account, (D)........................	„	11,521	13	3
Total Rs...		11,551	12	11

District No. 2.

District No. 2, Special Superintendence, Rs. 129.

Special Superintendence,........................ Rs. 129 0 0

18. The charge of Rs. 25, for Medical Allowance in June last, is explained by Mr. Bruce. The employment of Medical Subordinates received the sanction of Government in an Extract from Minutes of Consultation, No. 45, dated 27th May, 1853.

" Construction."

Earthwork,........................ Rs. 5,001 5 0

19. The work done amounts to yards 103,622, showing a rate of about 72 yards for 3½ Rupees. This is moderate, the work performed being chiefly on those portions of the line where the height of Earthwork is below the average.

Brickwork and Masonry,........................ Rs. 4,807 5 6

20. Work done 945 Cubic yards. This would give about 5 Rs. to the yard—very high; but the account includes a considerable amount of stones led to the work not used, and Rs. 85-4-6, expended in bricks.

21. The actual cost of the Masonry up to this time will be shown in a report for the year 1853, now in course of preparation.

Miscellaneous,........................ Rs. 96 12 8

Of this Rs. 44-11-7 is for Bungalows, which I would recommend be struck out, pending the decision of Government upon account of expenditure upon Bungalows, which will be submitted with the January accounts. The remainder Rs. 52-1-1 may be sanctioned.

District No. 2, Total Rs. 9,989-11-7

22. The total recommended for sanction in District No. 2, will be—

Special Superintendence, (B)........................	Rs.	129	0	0
Construction (D)........................	„	9,860	11	7
Total Rs...		9,989	11	7

Upon the other portions of the line no Construction Accounts are submitted yet Special Superintendence and Contingencies are as follows:—

District No. 3, ... Rs. 108 0 0

Assistants employed in Surveying, &c.

District	No. 7,........................	Rs.	8	13	0
„	No. 8,........................	„	8	13	0
„	No. 14,........................	„	8	13	0
„	No. 15,........................	„	8	13	0

23. These are for Peons and Lascars sanctioned, but not yet brought into regular monthly abstract. I would recommend that the above be sanctioned. The total expenditure recommended for sanction for December last will be as follows :—

For November 1853.

District No. 1,	Rs. 6,713	1	6
„ No. 2,	„ 3,651	13	7
„ No. 3,	„ 37	12	4
General Superintendence,	„ 3,320	10	8
Total Rupees.	13,723	6	1

For December 1853.

District No. 1,	Rs. 11,551	12	11
„ No. 2,	„ 9,989	11	7
„ No. 3,	„ 108	0	0
„ No. 7, 8, 14 and 15,	„ 35	4	0
General Superintendence,	„ 2,709	11	4
	24,394	7	10
Total Rupees.	38,117	13	11

Thirty-eight thousand one hundred and seventeen, Annas thirteen, and Pice eleven.

24. I beg to observe with reference to the 8th para. of an Extract from Minutes of Consultation in the Financial Department, No. 41, of the 17th February, 1854, that with the approval of Government, I would recommend that the practice of submitting the Accounts Monthly be continued. It appears to me that if there is delay and difficulty in keeping up the detailed Accounts so as to enable the Chief Engineer to prepare a general statement monthly, they would be much more likely to fall into arrears and confusion, if the details required for this purpose were allowed to spread over three months.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
7th March, 1854.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 60.

Extract from the Minutes of Consultation, dated 20th March, 1854.

Read the following* Report of the Consulting Engineer for Railways.

Here enter 7th March 1854, No. 59.

November 1853, Rupees... 13,821-11-2
Deduct charge on account of Bungalows,... ...... 98 5 1
Rupees...13,723 6 1

Para. 1. The Right Honorable the Governor in Council sanctions the Statements of expenditure submitted with the foregoing correspondence and remarks of the Consulting Engineer on account of the Railway, for the months of November and December last, amounting together to Rupees (38,117-13-11) thirty-eight thousand

December 1853, Rupees	24,439	3	5
Deduct charge on account of Bungalows	44	11	7
Rupees	24,394	7	10
Total Rs	38,117	13	11

one hundred and seventeen, Annas thirteen and Pice eleven, being exclusive of the items for Bungalows which are properly omitted from the amount now recommended by Major Pears, pending the submission of the account of expenditure on those buildings, and of the explanation called for in para. 5 of the Extract Minutes of Consultation of the 17th ultimo, No. 41.

1 Additional Moochee for December Rupees	5	0	0
1 Office Lascar, Rs	7	0	0

2. The Government have already noticed the irregular practice of entering under the head of Contingent Expenses the pay of extra Servants employed by the Railway Officers, and directed its discontinuance: they trust they will not have occasion to notice similar entries in future Accounts.

3. From the concluding remarks of Major Pears it would not seem to be advisable to alter the present practice of submitting the Accounts of expenditure *monthly*, which will accordingly be continued as recommended.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

Railway Department,
Consulting Engineer's Office.

No. 45.

From Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

I have the honor in forwarding for your information an Extract from Minutes of Consultation, as per margin, to convey to you the authority of Government for taking credit in the Engineer Department of the Railway Company for the following sums expended during the months of November and December, viz. :

No 60, 20th March, 1854.

				November.			*December.*		
General Superintendence			Rs.	3,520	10	8	2,709	11	4
Special Superintendence, District No.		1	„	26	0	0	29	15	8
Do.	do.	2	„	153	10	0	129	0	0
Do.	do.	3	„	37	12	4	108	0	0
Do.	do.	7	„	0	0	0	8	13	0
Do.	do.	8	„	0	0	0	8	13	0
Do.	do.	14	„	0	0	0	8	13	0
Do.	do.	15	„	0	0	0	8	13	0
Construction Account,	do.	1	„	6,687	1	6	11,521	13	3
Do.	do.	2	„	3,498	3	7	9,860	11	7
						Total Rupees ..	38,117	31	11

Total Rupees Thirty-eight thousand one hundred and seventeen, Annas thirteen and Pice eleven.

The Vouchers which accompanied your letters No. 10, 27, and 38, dated 11th January, 1st and 13th February 1854, are herewith returned. I beg to be favored with the several returns,* due on the passing of the above accounts, at your earliest convenience.

* Forms P. S. C. F. and G.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
25th March, 1854.

MADRAS RAILWAY AGENCY OFFICE,
23d February, 1854.

No. 51.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit for sanction the Contingent Accounts of the Engineer's Department for January last, amounting to Rupees 2,827-6-3.

General	Superintendence,	Rs.	2,494	1	0
District	No. 1,	„	72	15	4
„	No. 2,	„	132	13	11
„	No. 3,	„	59	0	0
„	No. 14,	„	22	10	0
„	No. 15,	„	45	14	0
		Rupees...	2,827	6	3

2. In reference to the charge "Commission on money borrowed on emergency Rupees 42, in District No. 1," Mr. Bruce has explained that "it was caused by some miscalculation or misunderstanding in my absence from the Presidency, by which Mr. McNair was without money and borrowed it from his Agent rather than delay the work or lose credit." I cannot but consider this a most dangerous precedent and one which cannot pass without notice. Even as Agent I should not consider myself authorized to borrow money on account of the Railway Company without any sanction. I think Mr. McNair's zeal has much outstripped his direction. Mr. Bruce has not stated anything in disapproval, but should you agree with me, I would solicit such instructions from Government as must prevent a repetition of a like proceeding in any shape or degree.

3. Mr. Ross' Tentage in District No. 2, Mr. Bruce says "might have been placed in Form A and will be so next month."

4. The Form B of District Nos. 7 and 8, will be forwarded so soon as received. Those now sent were kept until they were received; but as they have not reached me yet, and possibly there may not be any to send, I consider it proper no longer to delay them.

5. The Form B, District No. 14, is not forwarded in such a state as I could wish; but I was unwilling to send it back so far as Malabar. I hope hereafter we shall receive Accounts without alterations, which I am aware are never seen in a

Government Office. You have made, I well know, great allowance for a new Establishment.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

CAMP CACKOOLOOR, 28th March, 1854.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
27th February, 1854.

No. 56.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit the Construction Accounts and Progress Reports of Districts 1 and 2, for January.

	RS.	A.	P.
District 1	10,673	5	10
Do. 2	12,989	9	1
Total..	23,662	14	11

To the Chief Engineer 17th February 1854, No 59
To do 23d do No. 66.
Copy sent to Cons Engr. 24th February.
From do. 18th 20th and 25th do do.

2. The accompanying Correspondence with the Chief Engineer will afford explanation on certain points.

3. I beg to draw your attention to the item of Rupees 60 charged for an additional Bungalow. This charge Mr. Bruce explains he thought advisable at the West end of the District; and has included it under the head of Contingencies. I should not think that Mr. MacNair required further accommodation, having a Bungalow in the centre of his District and a Tent with an allowance for travelling. But my object is not so much to oppose this particular building as to raise the general question, and to have it settled, whether Bungalows may be built without sanction. The Contingencies should, I had supposed, be confined to Engineering necessaries not admitting of being readily calculated, and so not included in the general estimate. If, however, it was intended that the money might be expended in any way for the benefit of the Railway to the extent sanctioned, it will be no longer necessary to examine the particulars.

4. In reference to the remark regarding the Terminus Ground, in the Progress Report of District 1, it seems to me that no valid ground exists for complaint. The Government have evinced their utmost willingness in putting the Railway Company in possession of it, and accordingly took considerable trouble in doing so. If there has been any delay in getting possession, it must be attributed to unavoidable circumstances.

5. The figures to be inserted in the column of "Stores" in the Construction Accounts have not been received yet from the Chief Engineer.

6. I wish to submit for your better judgment whether there will be any practical difficulty in examining accounts from the estimate being made in one way and the Construction Account in another. In the accompanying Account, Form D, District No. 1, the cost of ballasting appears very high (as shown by the following Memorandum) compared with the estimate. I have thought it right to point out for your consideration the apparent excess of charge; the Memorandum does not pretend to perfect accuracy, and I may be mistaken.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

MEMORANDUM.

The item of Ballasting provided for in the Estimate sanctioned by Government is Cubic yards 69,163, at eight Annas per cubic yard—Rupees 34,731-8-0.

The charge made for the same in the Construction Account is as follows:—

$360\frac{1}{3}$ Bandy loads of Ballasting, at nine Annas each....................	Rs.	202	12	6
$137\frac{2}{3}$ do. do. at seven Annas each......	"	60	3	8
		263	0	2
498 Bandies, at eight cubic feet each, give cubic feet 3,984 or cubic yards $147\frac{15}{27}$ which at eight Annas each	Rs.	74	1	4
Excess Rupees ..		188	14	10

N. B.—One cubic foot of brick weighs 125lbs., consequently eight cubic feet of bricks* will weigh 1,000lbs. which is the average weight of a *bandy* load.

(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP CACKALOOR, 28th March, 1854.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
17th February, 1854.

No. 59.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. I have the honor to return the Construction Account of District 2, for January.

* Laterite Jelly is probably heavier than Bricks.

2. With reference to the item of "Piers" in Sheet 1 Supplemental, I request you will inform me whether it comprises "Labour" and "Materials," or is "Labour" only.

3. "Excavation of Foundations" Rupees 47 1-2 and Rupees 29-14-0 should, I suppose, have been entered under the head of "Labour," not "Materials."

4. "Sawed Trees" two at 2 Annas 4 Pice each, gives 4 Annas 8 Pice, not 4 Rupees 8 Annas.

5. "For clearing the line" the "rate" is 1 Anna 2 Pice while the "cost of each" is 1-2-0, it is difficult to understand which is the correct sum.

6. The Account in question does not bear the signature of the Resident Engineer.

7. The Account Particular of Miscellaneous expenditure is also returned.

8. The rate of Jaggery amounting to 219 and 479¾ viss is left out.

9. "Stationery for Inspector" should have been entered in the Contingent Bill, it does not appertain to "Construction." In future this rate should be attended to.

10. Rupees 2-11-0 have it is observed, been paid for Coolies on account of "Sleepers." This item should not appear in the "Construction" Account. I have a separate fund for the purpose, and in future when sums are expended for this purpose, a bill may be sent to me for payment.

11. The Account in question has not been attested by you as "True Copy."

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 18th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

Regarding your letter of yesterday's date I beg to observe—

The item of "Piers" is "Labour only."

Excavation of Foundation Rs. 47-1-2 ought to have been under the head of "Labour," and I have altered it accordingly.

"Stationery for Inspector" Rupees 1-15 6 has, I conclude, been a small supply purchased by himself from some hawker, and as all the Inspector's payments are entered in our Account, the abstraction of items is apt to create confusion. Such purchases are certainly irregular.

It appears to me that all payments made by the Engineering Department for the staking or arranging of Sleepers come under the head of "Carriage Materials" rather than the purchase Account of Sleepers to which you refer. This can however be done as you think proper, only that it is a convenience to us to have as few division of accounts as possible.

You may probably remember it was decided that it was unnecessary for the Resident Engineers to sign these Accounts, and as the forms in use in the Engineering Department are not the same as that now desired by Government, the latter are made out in my Office, and to send them back for the signature of the Resident Engineers would cause great delay.

I have, &c.

(Signed) GEORGE B. BRUCE,

Chief Engineer.

MADRAS RAILWAY,

Madras, 20th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,

Chief Engineer.

To E. SMALLEY, ESQUIRE,

Agent.

SIR,

I beg to enclose Form D for January, District 1.

I am not able at present to put the Stores into the column as required, but this account will be ready in a day or two, probably before you are ready to forward Form D to Government, and I will then add it to the account.

I have, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

N. B.—The additional Bungalow for the Engineer, at the West end of the District, comes under the head of Contingencies in the Estimate.

(Signed) G. B. B.

MADRAS RAILWAY,

Madras, 25th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,

Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,

Agent.

SIR,

1. I beg to return the Forms D and E.

2. The numbering of the miles had by an error in copying been misplaced.

3. The apparent discrepancy in the Earthwork done in Forms D and E arises from part of the work having been done by daily labour. It consequently only appears as cooly hire in Form D without any cubical rate.

4. The fencing was not entered in the previous Form E, but it ought to have been, it was therefore entered in this to correspond with Form D.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
17th March, 1851.

No. 79.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to Para. 4 of my letter, dated the 23d Ultimo, No. 51, I have the honor to submit for sanction the Contingent Accounts of Districts 7 and 8, for the month of January. These Accounts not having reached me at the proper time were called for on the 27th of February; on the 28th the Chief Engineer explained that the delay was owing to the want of Blank Forms to be sent from Madras. They were received in my Office on the 9th of March.

	RS.	A.	P.
District 7,	27	11	0
" 8,	28	3	6
Total ..	55	14	6

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP CACKALOOR,
28th March, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 31.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

With reference to my letters No. 89, dated 14th September and No. 124, dated

17th November last, I have the honor to call your attention to the entries made in Forms B for January, and request explanation thereof.

General Superintendence.

Mr. Hudson Draughtsman.
Office Lascars—Pensioned Sepoys, &c.

District No. 2.

Mr. D'Cruz, Apothecary, Horse Allowance.

I have the honor, &c.,
(Signed) T. T. PEARS, C. B.
Consulting Engineer for Railways.

MADRAS,
7th March, 1854.

Extract of a Letter from the Chief Engineer to the Agent, dated 13*th March* 1854.

"Regarding Major Pears' inquiries I beg to state that Mr. Hudson, the Draughtsman, was a person I took on trial for a day or two, but finding him inefficient I did not keep him."

"Pensioned Sepoys were employed to watch the office when all the usual Lascars were up country."

"The office Lascar remains as he has always done, but I have applied for sanction, so that if granted he will not appear again in Form B."

Copy of a letter from the Chief Engineer to the Agent, dated 17*th March* 1854.

"The Horse allowance entered for the Apothecary ought not to have been so stated, and why it was I cannot tell. It should have been all entered as Salary at the rate of Rupees 50: this makes no alteration in the amount."

(True Extract and Copy.)
(Signed) E. SMALLEY,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

With reference to his letter, dated 7th March 1854, No. 31.

Despatched 21st March 1854.

On letters from the Agent of the Madras Railway Company, Nos. 51, 56, *and* 79, *dated* 23*d and* 27*th February and* 17*th March* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits with explanatory letters the Accounts of expenditure in the Engineer Department of the Madras Railway for the month of January 1854.

They are as follows:

Total amount expended in January, Rs. 26,546-3-8.

Their amount in the aggregate being Rupees 26,546-3-8, as follows:

Contingent Expenses.

General Superintendence, Chief Engineer, Rs. 2494-1-0.

Chief Engineer's Office including General Workshop,...Rs. 2494-1-0

Mr. Bruce explains the entry of extra Office servants here, and the explanation appears satisfactory. There is nothing else objectionable.

District No. 1.

District No. 1.

SPECIAL SUPERINTENDENCE.

Contingent Charges,..Rs. 72 15 4

There is an extraordinary charge of Rupees 42 "Commission," on money borrowed for the purpose of carrying on the works. This step of raising money for the occasion during the absence of the Chief Engineer and consequent interruption in the supply of funds, appears to have been taken by the Resident Engineer with the best intentions. From the terms of disapprobation in which the Agent speaks of it, that Gentleman will doubtless exercise the authority he possesses to prevent a recurrence of such irregularities.

Earthwork,..Rs. 6,393 9 11

Construction Rs. 10673-5-10

The progress reported (Form E.) is "Cubic yards" 134,494½, being at the rate of about 73 yards for 3½ Rupees which is satisfactory: a good deal of this work has been performed upon portions of the line where the height of bank or depth of cutting is above the average.

Brickwork and Masonry,..Rs. 2,955 2 10
Progress,..336⅞ yards.

The amount however includes Rupees 720 expended in brick making and other sums expended in collection of materials to a considerable extent, which could not have been used with the labour charged for. It may therefore be passed, and so soon as a return of the expenditure in the Brickfields up to the end of the past year shall have been received, a special report upon this point will be made.

Permanent Way.

The Agent makes a remark on this entry considering the bandy-hire to be for ballast. It is however for the conveyance of blocks.

Miscellaneous,..Rs. 208 4 10
Fencing, ...,, 477 11 1
Extra Bungalows,.......................................,, 60 0 0

Upon this last item the Agent has some observations not so much in regard to the necessity of supplying it; but rather to the propriety of building it without authority, and charging it under "Contingencies." Upon the latter point, I shall therefore first observe that since a certain sum is allowed in each Estimate for "Contingencies" it is clearly to the advantage of the Railway Company that an occasional expense, if necessary, should be met, out of the sum so sanctioned; rather than be provided for, by sanction, in addition to the original Estimate. At the same time all expenditure—under whatever head—is liable to examination and sanction; and in all practicable cases, sanction should be obtained before hand, and the Expenditure given in as much detail as possible. Although the Government may have sanctioned a certain sum for Contingencies that sum is not necessarily expended at the discretion of the Chief Engineer of the Railway—but a large discretion will of course be left him. The "Bungalow" in the present instance was, I think, required: being the third in a distance of 25 miles; 60 Rupees is a moderate sum, but the expenditure should not have been given in the lump and the Agent might be required to furnish details and called upon

at the same time for a report as to the number of temporary Bungalows of all sorts, which he considers necessary for the Engineers, Inspectors, Apothecaries, &c., as at present sanctioned for each District. I would recommend that the Construction Account for District No. 1, for the month of January be passed to the extent of Rupees 10,673-5-10.

District No 2.

District No. 2.

SPECIAL SUPERINTENDENCE.

Contingent Charges Form B, Rupees 132-13-11.

The attention of the Agent might be called to the circumstance of the Resident Engineer of this District purchasing Stores, which might have been supplied better by himself, also to the circumstance of (9) nine Lascars being paid during the month. Explanation should have been given as to the necessity, (the survey being completed) of so large a number in connection with "Superintendence."

Construction Account.

Earthwork,..Rs. 5,308 6 1

Progress (Form E.) is Cubic yards 10,944 at 72 per 3½ Rupees.

Brickwork and Masonry,...Rs. 7635 6 3
Progress,..2220¼ Cubic yards.

As far as a comparison between the work reported, and the money spent is concerned, this is satisfactory.

The total amount of Masonry in this District is estimated at 14,000 yards nearly. The total estimated cost is 83,350 Rupees, which is at the rate of Rupees 6 per yard.* There appears to have been executed 4,315 yards at a cost of Rupees 23,730 which is at the rate of 5 Rupees the yard. The Work is chiefly of stone and the expenditure includes collection of materials to a considerable extent. The result may, I think, be considered satisfactory.

* Including excavation concrete, &c.

Miscellaneous, ...Rs. 45 12 9

Chiefly for constructing a Store Room and may be passed.

Total expended in Construction on District No. 2, for the month of January, Rupees 12,989-9-1.

District No. 3.

District No. 3.

SPECIAL SUPERINTENDENCE.

Contingent Charges Rs. 59-0-0 appear unobjectionable.

Contingent Charges in the following Districts :—

No. 7	Rs.	27	11	0
„ 8	„	28	3	6
„ 14	„	22	10	0
„ 15	„	45	14	0

In the Account for this last District, a charge is made for a Sub-Inspector. This is informal; but I learn that the individual so employed is one among others who will, if found qualified, be hereafter employed as Inspector under the sanction of Government conveyed in Extract Minutes of Consultation, No. 188, dated 24th December 1853. As a Sub-Inspector he would be entered in Form D, like any other day labourer; but until the work commences, while nothing but the preliminary operation of surveying, &c. are going on, that Form is not required: he is therefore entered in the Contingent Bill for the present, but his name will appear in the proper place when the work commences.

I would recommend that the monthly expenditure in the Engineer Department for the month of January be passed as above.

	General Superintendence,...........................Rs.	2,494 1 0
District 1.	Special Superintendence,........................... „	72 15 4
	Construction,.. „	10,073 5 10
District 2.	Special Superintendence,........................ „	132 13 11
	Construction,.. „	12,989 9 1
District 3.	Special Superintendence,........................ „	59 0 0
District 7.	Special Superintendence,........................ „	27 11 0
District 8.	Special Superintendence,........................ „	28 3 6
District 14.	Special Superintendence,........................ „	22 10 0
District 15.	Special Superintendence,........................ „	15 14 0
	Total Rupees..	26,546 3 8

Total Rupees Twenty-six thousand five hundred and forty six, Annas three, and Pice eight.

With reference to my report of the 7th March, I beg to state that a separate report on the expenditure incurred up to this date on Bungalows will be submitted in a few days.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP CACKOOLOOR,
28th March, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 86.

Extract from the Minutes of Consultation, dated 13*th April,* 1854.

Read the following Report of the Consulting Engineer for Railways.

(Here enter 28th March 1854.)

1. The Right Honorable the Governor in Council sanctions the expenditure on account of the Railway, under the heads of General and Special Superintendence and Construction in the Engineering Department for the month of January last, amounting to Rupees (26,504-3-8,) Twenty six thousand five hundred and four, Annas three, and Pice eight, being exclusive of the sum of Rupees 42-0-0, charged as "Commission on money* borrowed on emergency" by the Assistant Resident Engineer, Mr. McNair, for carrying on the works. The Government agree with the Agent in considering this a dangerous precedent, and one which should not pass without notice. Before admitting the charge thus irregularly and unauthorizedly incurred, they desire to be more particularly informed how the necessity for the loan could have arisen, and to whom attaches the blame of leaving Mr. McNair without funds.

* Rupees 4,200.

2. As regards the item of 60 Rupees for an extra Bungalow built without authority and charged under the head of "Contingencies," the Government would only observe that the allowance for Contingent Expenses is not intended to include the cost of Bungalows, and that it is clearly irregular to erect any without sanction. As the

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additional Bungalow is said to be the third in a distance of 25 miles, Major Pears will ascertain and report whether Mr. McNair draws tentage while he has this extent of accommodation—and the Agent should, as suggested, be called upon at the same time to state the number of temporary Bungalows of all sorts which he considers necessary for the Engineers, Inspectors and other subordinate Officers, as at present sanctioned for each District.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

Railway Department,
Consulting Engineer's Office.

No. 65.

From Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

In forwarding for your information the accompanying copy of an order of Government as per margin, I have the honor to request you will take credit in your Accounts for the following sums expended during the month of January 1854, in the Engineer Department, viz.,

Dated 13th April 1854, No. 86.

General Superintendence.

	Rs.	A.	P.
Contingent Charges, including Workshops,...............	2,494	1	0
District No. 1.			
Special Superintendence,...............................	30	15	4
Construction Account,..................................	10,673	5	10
District No. 2.			
Special Superintendence,...............................	132	13	11
Construction Account,..................................	12,989	9	1
District No. 3.			
Special Superintendence,...............................	59	0	0
District No. 7.			
Special Superintendence,...............................	27	11	0
District No. 8.			
Special Superintendence,...............................	28	3	6
District No. 14.			
Special Superintendence,...............................	22	10	0
District No. 15.			
Special Superintendence,...............................	45	14	0
Rupees...	26,504	3	8

Rupees Twenty-six thousand five hundred and four, Annas three and pice eight.

Charged as Commission on money borrowed.

You will observe that Government have withheld its sanction to the Expenditure on District No. 1, of Rs. 42, pending the receipt of further explanation which you are requested to afford at your earliest convenience.

I have to request that the usual Forms P. F. and G. for January, may be forwarded with as little delay as possible.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
19*th April*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
20*th March*, 1854.

No. 85.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Contingent Accounts of the Engineer Department for the past month.

		RS.	A.	P.
General Superintendence,		2,183	11	10
District	1,	28	5	9
,,	2,	62	0	0
,,	3,	72	0	0
,,	7,	33	0	11
,,	8,	99	9	4
,,	14,	76	10	3
,,	15,	83	12	6
Total Rs...		2,639	8	7

From Chief Engineer, 8th March 1854, para. 2.
To Chief Engr. 10th do. do. No. 91.
From do. 13th do. do. para. 2, 3.
To do. 14th do. do. No. 97.
From do 16th do. do.
To do. do. do. No. 105, para. 2.

2. I also enclose Copies and Extracts of certain letters to and from the Chief Engineer, which will afford explanation on certain points.

3. In regard to Post Runners who have hitherto been charged in the Contingent Bills at Rupees four each per mensem, it seems to me that they properly belong to the head of "Temporary Establishment" of each District. Mr. Bruce proposes, you will observe, to enter them in future in Form D. This seems to me irregular, as the item of "Runners" was never contemplated in the preparation of the Estimates, and was therefore not provided for in the work of construction. Should you agree with me in the suggestion above expressed, I shall submit an application for the Runners for the sanction of Government.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
2*d May*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Extract of a letter from the Chief Engineer, dated 8th March 1854, *para.* 2.

" Several alterations have been made in Red Ink in consequence of errors regarding the transit charge to Coimbatore and Salam respectively."

MADRAS RAILWAY AGENCY OFFICE,
10*th March*, 1854.

No. 91.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. I have the honor to return the Contingent Accounts of Districts 1, 2, and 3 for February.

2. In District 1, the hire of Carts should be under the head " Labour."

3. In District 2, Mr. Ross's Tentage has been entered. Tentage for Surveyors has been already sanctioned, and consequently it should appear in Form A. Agreeably to your letter of the 4th February this should have appeared accordingly.

4. In District 3, " Postage" should be under the head " Labour." It is presumed that the charge is for *Runners*, not for *Letters*, posted at the Post Office. If so the form of entry should be altered. In your letter of the 4th February these Runners you stated would be entered in Form D in future. They may at present be entered in Form B; but I shall ask Major Pears' opinion as to whether they may be brought on the " Temporary Establishment."

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Extract of a letter from the Chief Engineer, dated 13th March 1854.

Mr. Ross's Tentage has been struck off Form B, District 2, and I beg you will enter it in Red Ink in Form A, as it has not been transmitted to my Office."

" The Tappal Runners could not on District 3 be entered in Form D, as there has been none as yet."

MADRAS RAILWAY AGENCY OFFICE,
11*th March*, 1854.

No. 97.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. I have the honor to return the Contingent Statement of Districts 8, 14, and 15, for the month of February last.

2. In District 8, two Sub-Inspectors at Rupees 35 each are entered. In reference to this item, I beg to observe that the charging of personal allowances in Contingent Bills are prohibited.

3. In District 14, a sum of Rupees 10 is charged for an Interpreter and Conicapillay. It is requested to know why this expense was incurred; as above pointed out, personal allowances should not have appeared in Contingent Bills. Bandy hire Rupees 15-4-0 should have been under the head "Labour."

Vide letters form Cons. Engr. 14th Sept. and 17th Nov. 1853, Nos. 89 & 124.

4. In District 15, a sum of Rupees 8-12-0 is charged for a Sub-Inspector, to which the remark contained in para. 3 is applicable, Rupees 32 for Bandy and Rupees 4 for Batta, should have appeared under the head "Labour."

I have, &c.,

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 16th March, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

The Sub-Inspectors entered in Form B. District 8, are by orders of Government entered in Form D, but until the construction, strictly so called, is commenced, there is no Form D, and these men must of necessity be entered in Form B. They are required to superintend clearing parties in the jungle and otherwise assist the Engineers.

2. In District 14, the charge of Rupees 10 to an Interpreter and Conicopillay simply arises in this way. I suppose Mr. Gale has found a native who was of service to him in the field, and from assisting him in speaking, he has improperly styled him an Interpreter.

3. There is no authorized Staff for Surveying; and where Engineers are working in a country requiring so much clearing, it is, I think, advisable to leave a good deal to their individual judgment what temporary Staff they may require.

I have, &c.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

Extract of a letter from the Agent to the Chief Engineer, dated 16th March 1854, No. 105, para. 2.

"Form A, of District 2, having been already forwarded to the Consulting Engineer, the tentage of Mr. Ross cannot be entered in it; that for two months, may therefore be charged together in the next abstract."

(True Extracts and Copies.)

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
25th March, 1854.

No. 91.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit the Construction Accounts and Progress Reports of Districts 1 and 2, for the month of February.

District 1,	Rs.	11,983	6	4
„ 2,	„	13,921	2	1
	Rupees...	25,904	8	5

2. A copy of a letter from the Chief Engineer, dated 21st Instant, containing explanation on certain points is also enclosed.

27th Feb. 1851, No. 25. 3. The abstract of the Form E, required by you, having not been received, it has again been called for.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS, *2d May,* 1854.

Submitted (with observations) for the sanction of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 21st March, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Form E, or the Progress Report for the past months for Districts 1 and 2.

The amount entered as the estimated quantity of Brickwork on 33d mile has up to this time been exclusive of the Cortilliaur Bridge. This omission has now been rectified.

District 1. The proper estimated amount of Fencing was not previously entered, one section having been omitted, both are now entered.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

On letters from the Agent of the Madras Railway Company, Nos. 85 *and* 91, *dated* 20*th and* 25*th March* 1854, *respectively.*

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agents submits the accounts of expenditure in the Engineer Department of the Madras Railway during the month of February, which have been examined accordingly and found to amount in the aggregate to Rupees 28,544-1-0.

Total Rs. 28,544-1-0

The expenditure has been made under the following heads:—

Contingent Expenses, Rupees 2,639-8-7.

General Superintendence	Rs.	2,183	11	10
Districts 1, 2, 3, 7, 8, 14 and 15.	"	455	12	9
Contingent Expenses connected with the Superintendence,	"	2,639	8	7

I consider that these several sums may be passed with the exception of that of Rupees ten, charged in District No. 14, for the salary of an Interpreter. The Resident Engineer draws pay for an Establishment for the same month to the extent of Rupees 276 and among others a Writer was employed on a salary of Rupees 40. The work done in any kind has been hitherto small and the office work must have been utterly insignificant. The employment of a Conicopillay appears to have been quite uncalled for.

CONSTRUCTION ACCOUNT.

District No. 1.

Construction District No. 1, Rupees 11,983-6-4

Rupees	11,983	6	4
Earthwork	4,938	13	3

The work done is 100,559 yards, the Earthwork rate therefore is satisfactory.

Brickwork.

Brickwork	6,260	14	0
Progress, Cubic Yards	455	0	0

Of the total amount thus expended a sum of Rupees 3,993-4-8 has been expended in Brickfields, and a quantity of materials laid on at the Canal Bridge. The amount is unobjectionable.

The other charges in this District are—

Permanent Way	171	8	0
Fencing	225	0	1

with corresponding progress and

Miscellaneous Expenses,	Rs.	387	3	0

making a total on this District expended in February and now submitted for sanction Rupees 11,983-6-4.

District No. 2, Rupees 13,921-2-1.

The expenditure in District No. 2, during February, has been Rupees 13,921-2-1, viz.:

Earthwork,	Rs.	4,292	10	3
Progress Cubic Yards		75,889	0	0

Earthwork, Rs. 4,292-10-3.

The rate is rather higher than usual or about 60 yards for Rupees 3-8-0: but much of the work done during this month has, I observe, been executed where the bank is higher than the average.

Brickwork, Rs. 935-0-0.

Brickwork and Masonry,	9,335	11	6

The work is chiefly of stone and the amount executed during the month is

reported to have been cubic yards 3,045¼. The charges both for labour and materials appear to be moderate; and the progress of the work satisfactory.

Permanent Way, Rs. 231-0-0. Permanent Way,..............................Rs 231 0 0

In the purchase of laterite blocks at a moderate rate.

Miscellaneous,.. 61 12 4

The total expended in the District and now recommended for sanction is Rupees 13,921-2-1.

Striking out the 10 Rupees charged in District No. 14, for a Conicopillay the sanction of Government is solicited to the following :—

General Superintendence,......				Rs.	3,183	11	10
District No. 1.							
Special Superintendence,......	28	5	9				
Construction,......	11,983	6	4				
					12,011	12	1
District No. 2.							
Special Superintendence,......	62	0	0				
Construction,......	13,921	2	1				
					13,983	2	1
District No. 3.							
Special Superintendence,......					72	0	0
District No. 7.							
Special Superintendence,......					33	6	11
District No. 8.							
Special Superintendence,......					99	9	4
District No. 14.							
Special Superintendence,......					66	10	3
District No. 15.							
Special Superintendence,......					83	12	6
				Total Rupees...	2,853	1	0

Total Rupees twenty-eight thousand five hundred and thirty-four, and Anna one.

MADRAS, 2d May, 1854. (Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 106.

Extract form the Minutes of Consultation, dated 12*th May* 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 2d May 1854, No. 107.)

The Right Honorable the Governor in Council sanctions the statements of Ex-

penditure on account of General and Special Superintendence and Construction in the Engineer Department of the Madras Railway during the month of February last, amounting together to Rupees (28,534-1-0.) Twenty-eight thousand five hundred and thirty-four and Anna one—being exclusive of Rs. (10) Ten charged in District No. 14, for the salary of Conicopillay whose employment is stated by the Consulting Engineer to have been quite uncalled for.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 97.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Dated 12th May 1854, No. 106.

I have the honor in forwarding for your information an Extract from Minutes of Consultation, as per margin, to convey to you the authority of Government for taking credit in the Engineer Department of the Railway Company for the following sums of expenditure during the month of February 1854, viz.:

GENERAL SUPERINTENDENCE.

Contingent Charges including Workshop		Rs. 2,183 11 10
District No. 1.		
Special Superintendence	28 5 9	
Construction Account	11,983 6 4	
		12,011 12 1
District No. 2.		
Special Superintendence	62 0 0	
Construction Account	13,921 2 1	
		13,183 2 1
District No. 3.		
Special Superintendence	72 0 0	
District No. 7.		
Special Superintendence	33 6 11	
District No. 8.		
Special Superintendence	99 9 4	
District No. 14.		
Special Superintendence	66 10 3	
District No. 15.		
Special Superintendence	83 12 6	
Total Rs.	28,534 1 0	

Total Rupees Twenty-eight thousand Five-hundred and thirty-four and Anna one.

You will observe that Government has withheld its sanction to the Expenditure of Rupees ten charged for an Interpreter or Conicopillay in District 14.

I have, &c.,

MADRAS, 13th May 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

MADRAS RAILWAY AGENCY OFFICE, *27th May*, 1854.

No. 168.

FROM EDWARD SMALLEY, ESQUIRE, *Agent.*

To MAJOR T. T. PEARS, C. B., *Consulting Engineer.*

SIR,

With reference to the Extract from the Minutes of Consultation, dated 12th May, No. 106, sanctioning the Engineer's Accounts of the month of February, I have the honor to submit copy of a letter from the Chief Engineer respecting the item of Rupees 10 objected to by the Government, being the salary of a Conicopillay employed in District No. 14.

23d May 1854.

2. Mr. Bruce besides stating the necessity that existed of employing the Conicopillay in question, explains that as there was no Form D, for District 14, the charge had to be entered in Form B.

3. I consider the explanation to be satisfactory, though it is matter of regret that it had not been earlier afforded when my letter of the 14th March was received by Mr. Bruce.

4. The case was simply this—Mr. Bruce was asked to explain the charge of 10 Rupees for an Interpreter and Conicopillay in District No. 14. In reply Mr. Bruce writes under date the 16th March. "I suppose Mr. Gale has found a Native who was of service to him in the field" and further on "where Engineers are working in a country requiring so much clearing, it is, I think, advisable, to leave a good deal to their judgment." But there was no explanation stating the Conicopillay was required to superintend coolies for clearing the jungle, which I now suppose was the case. Had the explanation been clearly stated, I have no doubt that the charge would have been allowed.

5. There must, no doubt, be left a large discretion with the Chief Engineer of the Railway, and he may authorize his Assistants to employ suitable servants when surveying and clearing jungle, and upon his explanation and recommendation the charge would be allowed. This however is different from permitting an Assistant Engineer to expend money to the best of his judgment, as stated in the 7th Para. of Mr. Bruce's letter.

6. I regret very much the tone of Mr. Bruce's letter. Such strong remarks were not necessary. I have always wished to afford every facility to the Chief Engineer and to forward the work in which we are jointly engaged and interested. But in all large works with great expenditure there must be checks and calls for explanation. If charges

are to be sanctioned as a matter of course; all audits and superintendence are reduced to a dead letter and become worse than useless.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS, 31*st May*, 1854. (Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 23*d May* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of a copy of the Minutes of Consultation, dated 12th May 1854, from which it appears that the charge of Rupees 10 for a Conicopillay in District 14, has been struck out of the account, Form B.

2. I think there must be some mistake here, for it is the universal practice in this part of India, both in the Government works and our own to employ Conicopillays where Coolies are kept at work.

3. In the present case this was the simple fact, and as there is no Form D, until construction, properly so called, commences any men employed as Conicopillays, necessarily are entered in Form B.

4. I trust that the above explanation will be considered sufficient and that the Rupees 10 charged for a Conicopillay will be allowed.

5. Independently of the merits of this particular case, the decision of Government has given me more anxiety than I can express.

6. If a conscientious and experienced Engineer, four hundred miles from Head Quarters, is not at liberty to employ in the execution of work, the best available assistance which he can procure, without being liable to be called on by Government to pay the expense out of his own salary, should they imagine (upon grounds which at the best must be very slender) that part of the expense was unnecessary, there will be an end to all harmonious action and all spirited exertion.

7. The Company had a perfect right to say in Mr. Wilson's case, "we will not pay more for your Bungalow than was necessary for your own accommodation and the public service." They had a perfect right too, if they thought fit, to repudiate the expense Mr. MacNair incurred on his own responsibility for obtaining money, but the case is very different when an Engineer in the discharge of his duty employs Coolies, Conicopillays, and others for the Company's service; they then have no right whatever to deduct from the Engineer's salary the money he has to the best of his judgment expended.

8. You may if you like, tell an Engineer he is unfit to be trusted and his services are no longer required; or you may tell him that instead of employing 100

Coolies and one Conicopillay he is in future to employ only 50 Coolies and no Conicopillay, but unless in a case of dishonesty you have no right to deduct from his salary money already spent on the public service.

9. I beg that it may be distinctly understood that I do not include in these remarks personal allowances and expenses of any kind, neither do I repudiate the full and free investigation of the accounts, nor the propriety of adhering strictly to the authorized Establishment in all cases to which that arrangement is applicable: but in conducting work the most careful and experienced man will some times err, and even supposing it to be an error, is he on each occasion to forfeit his salary to the extent that the Consulting Engineer may consider him to have been deficient in judgment?

10. The consequences to which this might lead are so serious, nay so fatal, that I have considered it necessary to dwell longer upon it than the paltry sum of money concerned may have seemed to justify.

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company No. 168, *dated* 27*th May*, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits a letter from the Chief Engineer of the Railway regarding a charge of Rupees 10, made among the Contingent Expenses of District 14, for the month of February 1854, and disallowed by Government in Extract Minutes of Consultation, as per margin. The charge was for the pay of a Conicopillay and was not properly explained when the bills were originally forwarded.

12th May, 1854, No. 106.

The Engineer of that District had a complete establishment allowed him by Government including a Writer on a salary of Rupees 40 per mensem. Of office work or works of any kind there had been very little, and the employment—in addition to this establishment—of a Conicopillay on Rupees 10 per month, the object of which was not fully explained by Agent, was objected to.

The pay of the establishment for February, was Rupees 769-10-8 exclusive of an advance which had been made to the Engineer in England.

The whole cost (exclusive of a portion of the Resident Engineer's pay) of the Establishment on that District had been up to the end of February Rupees 2,640-6-6.

The cost of work done,............................... Rs. 108 1 3

The hire of Coolies on whose account this Conicopillay was employed in February amounted, exclusive of two upon monthly pay to Rupees 9-8-10. I should make no objection to this, being sensible that in the beginning of a work such disparity between overlookers and overlooked must often happen and that the employment of a Conicopillay to keep account of the labor is usual and proper; but the circumstance needed an explanation, which should have been afforded clearly and promptly.

The Agent now recommends that it be sanctioned and if approved by Government authority may be given to enter in the next month's Contingent Bill.

Mr. Bruce's ideas as to the degree to which supervision of the expenditure to be exercised by Government are not quite clear. That gentleman approves of the expenditure

being disallowed in some cases but not in others, implying as it seems to me a recognition of the principle of a discriminating control, but taking it out of the hands of Government.

However conscientious and experienced the servants of the Railway Company, I do not conceive that they have any special claim to exemption from that degree and kind of responsibility, which attaches to all men in similar situations whether serving the state, a public Company, or a private individual.

I think the Agent of the Railway Company has not the least reason to complain hitherto of want of confidence on the part of Government either in himself or any employed under his orders.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
31*st May*, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 129.

Extract from the Minutes of Consultation, dated 13*th June*, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 31st May 1854.)

As the charge for the salary of a Conicopillay disallowed in Extract Minutes of Consultation of the 12th Ultimo, is now recommended by the Consulting Engineer for Railways; the Right Honorable the Governor in Council is pleased to sanction the sum of Rupees (10) ten disbursed on that account.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
3*d May*, 1854.

No. 129.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Contingent Bills of the Engineer Department for the month of March, amounting to Rupees 1,417-2-0.

	RS.	A.	P.
General Superintendence,..............................	562	0	11
District 1,..............................	32	12	5
" 2,..............................	62	0	0

District	3,	70	0	0
„	7,	42	9	6
„	8,	298	10	0
„	14,	167	11	8
„	15,	181	5	6
	Total Rs...	1,417	2	0

Extract from Chief Engineer, 15th April, 1854.
Copy to do. 21st do. do. No. 157.
Ext from do. 25th Apl. do.
Do. from do. 19th do. do.

2. Some correspondence with the Chief Engineer is also forwarded in explanation of certain items.

I have, &c.

(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 19*th June*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

Extract of a letter from the Chief Engineer, dated 15*th April,* 1854.

District 14, *Form B.*

1. Here a second writer has been temporarily engaged by Mr. Gale because his own writer is actually employed superintending the Workshop at Palghaut in the absence of any one else. This I shall put on a more regular footing before next month.

District No. 8, *Form B.*

1. Here Mr. Beattie has entered a charge for attendance and advice to his Camp by Dr. Johnston of Salem, before the Apothecary was appointed. This I beg to recommend should be paid.

2. Also a Tent purchased for his Inspectors before those supplied by the Company came to hand, on sanction being given for this : I will of course render to you the usual receipt.

Copy of a letter from the Agent to the Chief Engineer, dated 21*st April,* 1854, *No.* 157.

With reference to the Statement of Contingent Charges of District No. 7, for the month of March, I have the honor to request you will explain why a charge of Rs. 12 was incurred on account of Medicine, when two boxes of medicine were supplied to you on the 11th February last.

Extract of a letter from the Chief Engineer, dated 25*th April,* 1854.

1. The sum of twelve Rupees was charged for medicine on District 7, because the whole of the medicine in the Camps of No. 7 and 8 was used up.

Extract of a letter from the Chief Engineer, dated 19*th April,* 1854.

3. Form B, contains two entries which may be objectionable: Mr. Gibson and Mr. Williams, writers.

4. In making the additions to my Office I was obliged to make the required selections in good time, before leaving the Presidency, before indeed I had the sanction of Government.

5. These Writers were only engaged conditionally, provided the sanction of Government was granted, and therefore I am under no obligation to pay them; but as they were long at work in Madras, in expectation of sanction, I will be glad if I am allowed to pay them for service done, though it is out of the ordinary course.

(True Extracts and Copy.)

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
12*th May*, 1854.

No. 144.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the undermentioned Accounts of the Engineer Department for the month of March, amounting to Rupees 37,741-3-7.

Construction Account, District No. 1, with Supplementary Form D.

	RS.	A.	P.
For Madras Station,	15,997	5	8
Do. do. District No. 2,	16,312	1	5
Do. do. " " 3,	432	4	5
Workshop Account,	4,999	8	1
Total Rs...	37,741	3	7

2. I also forward the Progress Reports of Districts 1, 2 and 3 for the period under reference, together with an Abstract of them as required by your letter, 27th February, No. 25.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
9*th June*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
14*th June*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

TO EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In reply to the letter of Major Pears, No 127, I beg to observe:

1st. Not having by me the Construction Accounts I am unable to give a detailed

explanation in figures of the cost of brickwork. I went carefully into the Estimate in March last, and do not anticipate any material excess above the Estimate.

The apparent excess arises from the station being entered in the same Form with the ordinary district expenditure and many lacs of bricks have been made for the station, which swell the expenditure without increasing the amount of work done.

This explanation will probably be sufficient for the present, and on rejoining my Office, I will again look into the matter and if there is likely to be any excess I will report it.

2nd. The bulk of the Expenditure on the Madras Station was for brick-making. what brickwork was done should however have been entered in Form E.

3rd. The expense incurred in plate laying in March was necessarily unattended with any progress report, as we did not receive a single chair until May 19th. The expenditure has hitherto been entirely preparatory leading Materials, &c.

4th. As all the brickwork on District 2 is done by daily labour, the amount of work done cannot appear in Form D, but it is entered in Form E.

I have, &c.,

(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER.

For information with reference to his letter dated 6th June 1854.

14th June 1854.

On letters (Nos. 129 *and* 144) *from the Agent of the Madras Railway Company, dated respectively 3d and 12th May* 1354.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits the Accounts of Expenditure on the Madras Railway in the Engineer Department during the month of March 1854, amounting in the Aggregate to Rupees 39,158-5-7.

The particulars are as follows:—

CONTINGENT CHARGES.

Connected with superintendence and surveying, amounting to Rupees 1,417-2-0, viz.:

	RS.	A.	P.
General Superintendence,	562	0	11
District No. 1,	32	12	5
" " 2,	62	0	0
" " 3,	70	0	0
" " 7,	42	9	6
" " 8,	298	10	0
" " 14,	167	11	8
" " 15,	181	5	6
Total Rs...	1,417	2	0

2. Some of the entries in these Bills are informal, such as the Sub-Inspectors in District 8. These men are entered here until the work actually commences, when they will be found in the Construction Account.

3. A charge of Rs. 40 is entered in the Bill for the same District for Medical attendance. The Agent should be informed that this is irregular. There was no emergency to call for this payment in anticipation of sanction. The provision of Medical attendance for the Company's Servants is a business that belongs to the Agent's Department and arrangements have been already made under sanction of Government for this purpose. On this occasion the Apothecary appointed to the District had not arrived, the payment may therefore be sanctioned.

CONSTRUCTION ACCOUNT.

These are for District No. 1	Rs.	15,997	5	8
" " 2	"	16,312	1	5
" " 3	"	432	4	5
Workshops,	"	4,999	8	1
Total	Rs.	37,741	3	7

4. These several accounts have been examined and are recommended for sanction. A large sum has been expended on District No. 1, on Brickwork, viz., Rs. 6,888-14-5. The progress has been already reported small. The accounts show however that of this, Rs. 3,516-2-6, has been expended in brick-making and is connected with the proposed Terminal Station.

5. The account for Brickwork and Masonry in this District No. 1, is not satisfactory. The total estimated cost was Rs. 46,945 the quantity being 8,890 cubic yards.

6. The amount expended already is Rs. 43,298-9-0. The amount of work done being cubic yards 5,386, there are 3,000 Rupees left to complete 3,590 yards, which will, I fear, even supposing the whole of the materials to have been laid in, be found insufficient.

7. The Bridge on the Canal in Madras has been a source of much trouble and expense. The estimate for the work amounted to Rs. 6,694-9-0, exclusive of timber superstructure. Up to the end of March Rs. 9,170-10-4 had been expended on it.

8. A letter of explanation from the Chief Engineer of the Railway is appended in which further information on the subject is promised; and I have requested that in the event of unforeseen circumstances having rendered supplemental estimates necessary, the same may be submitted without delay.

9. The rest of the items in the Construction Account for District 1, require no remarks, and I would recommend that the account for the month be passed in full.

District No. 2.

Rupees, ... 16,312 1 5

10. Of this there was expended in Earthwork Rupees 5,588-12-8, the work executed amounting to 97,852 yards. The rates are fair, considering the nature of the soil and height of banks.

11. The sum of Rupees 10,531-15-3 was expended in Brickwork, the work done amounting to 2,838¼ cubic yards. The average cost of work done during the month is thus not quite four Rupees the yard. I would recommend that these Construction Accounts on District 2, for the month of March, be passed to the extent of Rupees 16,312-1-5.

District No. 3.

12. The expenditure amounted for the month of March to Rupees 432-4-5, a commencement having been barely made in Earthwork and the manufacture of bricks.

Workshops, ... Rs. 4,999 8 1

13. The expenditure in the Workshops at Madras and Palghaut are of a miscella-

neous character, consisting of the making up of implements of various kinds, trucks, wheel-barrows, centerings of Bridges, doors and windows for Bungalows, Stations, &c., a detailed report is rendered half-yearly showing the articles made up, and the cost of each.

14. The expenditure during March has been Rupees 4,999-8-1 now recommended for sanction, making a total expenditure in the Engineer Department for that month of Rupees thirty-nine thousand one hundred and fifty-eight, Annas five and Pice seven. (39,158-5-7.)

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
19*th June,* 1855.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 143.

Extract from the Minutes of Consultation, dated 27th June, 1854.

Read the following Letter from the Consulting Engineer for Railways.

(Here enter 19th June 1855, No. 151.)

The Right Honorable the Governor in Council sanctions as recommended by the Consulting Engineer the expenditure on the Madras Railway in the Engineer Department during the month of March last, amounting to Rupees (39,158-5-7) thirty-nine thousand one hundred and fifty-eight, Annas five and Pice seven. Major Pears will communicate to the Agent the informal entries and irregular disbursement noticed in Paras 2 and 3 of his observations.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 152.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to forward for your information an Extract from Minutes of Consultation, as per margin, and to convey to you the authority of Government for taking credit in the Engineer Department for the following sums of expenditure during the month of March 1854.

No. 143, dated 27th June 1854.

GENERAL SUPERINTENDENCE.

Contingent Charges,...............................	562 0 11	
		562 0 11

District No. 1.						
Special Superintendence,...........................	32	12	5			
Construction Account,..............................	15,997	5	8			
				16,030	2	1
District No. 2.						
Special Superintendence,...........................	62	0	0			
Construction Account,..............................	16,312	1	5			
				16,374	1	5
District No. 3.						
Special Superintendence,...........................	70	0	0			
Construction Account,..............................	432	4	5			
				502	4	5
District No. 7.						
Special Superintendence,...........................				42	9	6
District No. 8.						
Special Superintendence,...........................				298	10	0
District No. 14.						
Special Superintendence,...........................				167	11	8
District No. 15.						
Special Superintendence,...........................				181	5	6
Madras and Palghaut Workshops,.....................				4,999	8	1
Total Rupees				39,158	5	7

Total Rupees thirty-nine thousand one hundred and fifty-eight, Annas five and Pice seven.

An extract from Report to Government, dated 19th June 1854, is herewith forwarded for your information.

MADRAS,
3d July, 1854.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
23d May, 1854.

No. 161.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit for sanction the Contingent Accounts of the Engineer Department for the past month, amounting to Rupees 1,346-9-1

General Superintendence,..................	Rs.	289	9	11
District 1,................................	„	49	2	0
„ 2,.......................................	„	231	9	3
„ 3,.......................................	„	61	8	4
„ 7,.......................................	„	49	5	3
„ 8,.......................................	„	141	4	0
„ 13,......................................	„	217	7	8
„ 14,......................................	„	306	10	8
Total Rs...		1,346	9	1

6th and 8th May 1854. 2. I also forward copies of two communications, from the Chief Engineer, explaining certain items in Districts 1 and 2. As Mr. Wilson has now charge of three Districts, and has consequently much moving about, I think the charge for an Extra Tent is proper and should be allowed.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP CUDDAPAH,
31*st July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort. St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 6th May, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. In forwarding Forms A and B, for District No. 1, there is an item in Form B, requiring explanation.

2. Mr. McNair has charged for an extra Writer.

3. Some of his detailed accounts when our works were first commenced, got a little into confusion, and require examination; the ordinary Office Establishment are not able to do more than keep pace with the accounts as they now come in. I thought it advisable therefore that Mr. McNair should have a temporary Writer to adjust the previous work.

4. I think Mr. McNair is entitled to this assistance, and that it is fairly a contingency to be entered in Form B.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 8th May, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I omitted to observe in transmitting Form B, for District 2, the charge of Rupees 150 for a Tent.

2. Mr. Wilson has now so much moving about, and for so much longer distances

than when only in charge of a District, that he could not do it with comfort or despatch with only one Tent. He therefore purchased one which was for sale in Madras at a cheaper rate than it could be procured out of the Government Stores.

3. I hope that this charge will be allowed to Mr. Wilson.

I have, &c.,

(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
3d June, 1854.

No. 178.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Construction Accounts of the month of April, amounting to Rupees 31,800-2-1.

	RS.	A.	P.
District 1, inclusive of Madras Station,	14,685	2	9
" 2,	12,278	3	6
" 3,	776	12	0
Workshops,	4,059	15	10
	31,800	2	1

I also forward the Progress Reports with a summary.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP CUDDAPAH, *31st July,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 150.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

1. I have the honor to acknowledge the receipt of your letter No. 161, of the 23d ultimo, forwarding the Contingent Accounts for the month of April.

2. With regard to a charge made by the Resident Engineer of District 2, of Rs. 150, for an additional Tent, you observe that Mr. Wilson has charge of three Districts and has much moving about and that you think the charge proper and that it should be allowed. Upon this, I beg to observe that the same reason if admitted in this occasion, must be made to apply in other similar cases of which according to the arrangements now proposed, there are already several, and will be more.

3. The allowance for a second Tent is an increase to the personal allowances of the Resident Engineer. The number of Tents actually necessary in marching about the country does not appear to me to depend upon the distance a man has to march.

4. Sanction was given to the issue, free of charge, of one set of Tents to each Engineer, and an allowance for tentage granted in addition. It was understood that henceforward all his camp equipage would be provided at his own expense.

5. The personal allowances of the Engineers appointed from Home have been hitherto determined by the Home authorities. If however you consider that the charge in question should be passed, I would request you to favor me with your views, more particularly, as to the mode and extent to which the privilege of extra Tent accommodation is to be accorded; since the present case must necessarily become a precedent.

6. I request full explanation regarding the sum of Rupees 20-0-0, charged for in the Bill for District 14. You will observe that this is a direct contravention of the order of Government conveyed in an extract from Minutes of Consultation as per margin.

Nos 41 and 60, dated 17th February, Para 6, and 20th March 1854, Para. 2.

7. I beg in future that no names of Lascars, Coolies and others be entered into Form B: their number and rate of pay are sufficient.

8. It is in Form A alone that names are required according to the practice in all Government Departments.

MADRAS, 28*th June*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
29*th June*, 1854.

No. 221.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to the former part of your letter of the 28th instant relative to a charge for a second Tent stated to be required by the Resident Engineer in District No. 2, I have the honor to explain that I did not contemplate any additional allowance being granted to Mr. Wilson for moving or keeping it up.

2. My reason for recommending the grant of the cost of an additional Tent to Mr. Wilson was this. At one end of the three Districts, comprising altogether 75 miles, which are placed under his superintendence, there is a large Bridge over the Poiney river about to be constructed; and at the opposite end is situated the terminal station,

a very important work. There is also the large bridge over the Cortilliaur under his immediate direction. He will often require to visit these extreme points, and within such a time that one Tent could not be moved from one place to another.

3. I wish to add that I quite see the necessity of not introducing bad precedents as to extra charges; and if, upon the whole, it appears to you that the charge in question is one which should not be sanctioned, I would withdraw my recommendation in its favour.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP CUDDAPAH, 31*st July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
30*th June*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD, SMALLEY, ESQUIRE,
Agent.

SIR,

In answer to the inquiries of the Consulting Engineer, dated 28th June, I beg to observe that the sum of Rupees 20 charged for extra Writer would have more properly been charged as Cashkeeper in Form A, but the party not having given the requisite security, Mr. Gale thought it would be better to enter him as he has done in Form B.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER.

For information with reference to Para. 6, of his letter, dated 28th June, No. 150.
3*d July*, 1854.

On letters Nos. 161, 178 *and* 221 *from the Agent of the Madras Railway Company, dated respectively the* 23*d May*, 3*d and* 29*th June* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. With these letters the Agent submits the several Accounts of expenditure in the Madras Railway during the month of April 1854, amounting in the aggregate to the sum of Rs. 33,146-11-2. Of this, the sum of Rs. 1,346-9-1, is charged under the head of Contingencies in the several Districts as shown in the Agent's letter.

Form B. 23d May.

2. The whole of the charges in these Bills appear admissible with the exception of a Tent purchased by Mr. Wilson, which should not have been entered; the salary and personal allowances of the Resident Engineers having been already referred to, and determined, by the Board of Directors in England., I would recommend that this be disallowed and the amount of Bill (B) for District No. 2, will become Rs. 81-9-3, instead of Rs. 231-9-3.

3. Construction Account, District 1, Rupees 14,685-2-9.

Earthwork,..	Rs.	3,553	2	6

The amount of work performed is 57,004 cubic yards which gives a rate of something above 50 yards to the pagoda. Though not so favorable a rate as heretofore it is by no means a high rate, considering the character of the season, and the height of a great portion of the banks.

4. Masonry (including brick-making) Rupees 4,547-11-1.

Of this has been expended.

On the Canal Bridge,..................................	Rs.	1,030	14	7
On Minor works of Masonry,...........................	„	1,551	4	6
Brick-making,..	„	1,957	8	0

5. It appears probable that the expenditure on the Canal Bridge will exceed the Estimate. The Agent has promised detailed information on the subject; but has not yet furnished it. A comparison between the work done on Minor works of Masonry (140 yards) and the amount expended is as far as it goes favourable; but the bricks expended from Store have yet to be taken into account.

Permanent Way,..........	Rs.	461	6	4
Fencing, ...	„	271	6	4
Miscellaneous, ...	„	66	1	3
Madras Station,..	„	5785	9	3

6. The latter amount consists chiefly of expenditure in Brick-making and the construction of a portion of the compound wall.

7. Construction in District 2, Rupees 12,278-3-6, viz.:—

Earthwork,......................	Rs.	3,659	3	8

8. The progress has been fair and the rate moderate.

Masonry,............	Rs.	7,101	15	7

Of this sum Rupees 3,357-12-0, were expended in the large Bridge over the Cortilliaur. The work seems to be carried on at reasonab' rates.

Permanent Way,..	Rs.	1,401	1	9
Miscellaneous,..	„	115	3	6

Construction, District 3, Rupees 776-12-0.

Earthworks,.....	Rs.	520	1	7
Brickwork,........	„	123	0	3
Miscellaneous,..	„	133	10	2
Workshops,..	„	4,059	15	10

9. The Agent has sent no report of the work performed in these Workshops, he will be requested to do so in future.

10. The rates are favorable and the expenditure unobjectionable.

11. I would recommend that the Agent be authorized to take credit for the following expenditure, during the month of April last.

Contingent connected with Superintendence,..........	Rs.	1,196	9	1
Construction,......................................	„	31,800	2	1
Total Rs...		32,996	11	2

Total Rupees thirty-two thousand nine hundred and ninety-six, Annas eleven and Pice two.

CAMP, CUDDAPAH, 31st July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 181.

Extract from the Minutes of Consultation, dated 18*th August,* 1854.

Read the following observations of the Consulting Engineer on letters from the Agent of the Railway Company.

(Here enter 31st July, 1854.)

Contingencies connected with Superintendence,	Rupees,	1,196	9	1
Construction,	„	31,800	2	1
Total Rupees...		32,996	11	2

1. The Right Honorable the Governor in Council sanctions the account of expenditure on the Madras Railway during the month of April 1854, amounting in the aggregate to Rupees (32,996-11-2) thirty-two thousand nine hundred and ninety six, Annas eleven and Pice two, being exclusive of the item of Rupees (150) one hundred and fifty for an extra Tent, which is disallowed for the reasons stated by the Consulting Engineer.

Discount for cashing a cheque of Rupees 637-10-0, at 1 per cent,...........	6	6	0
Bazaar Account,.........	19	3	5
Discount for 300 Rupees at 1½ per cent..............	4	8	0

2. The items entered in the margin, which are passed by the Consulting Engineer appear to require some explanation which it is requested may be obtained and laid before Government. The necessity of incurring a charge on account of discount for cashing Cheques is not apparent, as under the arrangements recently sanctioned every facility is afforded for the remittance of money for carrying on the works.

3. The progress in Earthwork to Government observe, has not been great.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 193.

FROM LIEUT. COL. T. T. PEARS, C. B.
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

18th Aug. 1854, No. 181.

I have the honor to forward for your information copy of an order of Government, as per margin, and to request you will take

credit in the account of the Railway Company, for the following sums expended in the Engineer Department during the month of April.

Contingent Expenses connected with Superintendence.

General Superintendence,	Rs.	289	9	11
District 1,	„	49	2	0
„ 2,	„	81	9	3
„ 3,	„	61	8	4
„ 7,	„	49	5	3
„ 8,	„	141	4	0
„ 13,	„	217	7	8
„ 14,	„	306	10	8
Total Superintendence, Rs.		1,196	9	1

CONSTRUCTION ACCOUNT.

District 1,	Rs.	14,685	2	9
„ 2,	„	12,278	3	6
„ 3,	„	776	12	0
Workshops	„	4,059	15	10
Total Rupees..		31,800	2	1
Grand Total Rupees ..		32,996	11	2

Rupees Thirty-two thousand nine hundred and ninety-six, Annas eleven and Pice two.

I request explanation may be furnished regarding the two charges for discount noticed by Government. These charges were incurred, I believe, from the necessity which arose for remitting money by cheques. The cause of that necessity requires explanation and the date of the occurrence.

The Bazaar Accounts will be explained by a reference to the usual vouchers in my Office.

The Government have, you will observe, disallowed the charge made by Mr. Wilson for the extra Tent. An extract from my report is annexed for your information.

I take this opportunity of requesting that notice may be taken in future and in general terms in the Progress Reports E, of the work done in the Workshops.

I have, &c.,

CAMP, BANGALORE,
31*st August*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 56.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

In obedience to instructions conveyed in an Extract from Minutes of Consultation in the Financial (Railway) Department, No. 181, dated the 18th August 1854, I have the honor to submit the following explanation of the items referred to as having been passed by me.

2. Bazaar Account Rs. 19-3-5, is a charge supported by a Voucher showing the number, description and cost of Miscellaneous Articles required and purchased in the bazaar. These Vouchers are examined by me, and returned with the sanctioned Accounts to the Agent.

3. On the subject of the "discount" the Chief Engineer writes to the Agent as follows, in explanation, in a letter, dated 25th Ultimo. "It is frequently a convenience when small sums are to be drawn for any purpose, to do this by cheque instead of the usual manner, by Accountant General's Bills."

"It is much less trouble and when the Accountant General's fee with postage backwards and forwards are taken in the Account, there is very little difference in the expense. I of course refer to small sums."

"The Engineers occasionally wish to have money paid in this way to enable them to draw money, where they may be at the time located, instead of sending to a distance to draw the money with an escort of Peons."

"I intended to have sent the above explanation sooner in reply to the inquiries of Colonel Pears."

4. The above explanation has been given in a letter relative to other Accounts and the original will be submitted in due course.

5. I have requested the Agent in future to be careful in making special and separate replies to the several orders and communications transmitted to him.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
21st October, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 77.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter No. 85 of the 20th of March, I have the honor to state that the expenditure for Runners should in my opinion be properly charged in Form B, the pay of a man for conveying orders, letters, &c. being most properly a Contingent charge connected with superintendence.

There is a considerable sum allowed in the Estimate for "Contingencies:" such a charge as this comes fairly under that head. If these men were included in Form A it would involve the sanction of an expenditure beyond the estimate, it being assumed that nothing in that Form is provided for in the estimate.

I take this opportunity of requesting that the Form D may be printed in future.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
28th April, 1854.

MADRAS, RAILWAY AGENCY OFFICE,
28th June, 1854.

No. 216.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Contingent Accounts of the Engineer Department for the past month.

	RS.	A.	P.
General Superintendence	124	13	7
District No. 1,	51	1	0
" " 2,	62	0	0
" " 3,	73	8	0
" " 7,	100	5	2
" " 8,	139	10	6
" " 13,	47	1	6
" " 14,	124	13	6
Total Rs.	723	5	3

26th June, 1854, P. 2.
2d " "

Extract and Copy of letters received from Mr. Bruce, in explanation of certain charges in Districts 1 and 8, are herewith forwarded.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP, TRIVELLUM,
13th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Extract of a Letter from the Chief Engineer, dated 26th June 1854.

Para. 2. The extra Writer was engaged, District 1, for the same reasons as last month with the additional reason that the ordinary Writer was sick.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 2d June 1854.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Forms A and B, for Districts 7 and 8.

2. In District 8, there is an irregular entry of a few days salary to a Writer; this arises from the Writer having been engaged a few days before the previous one was transferred.

3. Out in the Jungle it is difficult to get men just when they are wanted, and occasionally an Engineer is obliged to entertain those he requires a few days earlier than is strictly allowed to avoid the risk of being left without assistance altogether.

I have the honor to be, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Extract and Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
26th July, 1854.

No. 245.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Construction Accounts for the month of May, amounting in the aggregate to Rupees 45,139-4-0.

	RS.	A.	P.
District 1, including Terminal Station,......	19,738	7	9
„ 2,......	11,124	8	11
„ 3,......	2,535	14	5
„ 7,......	127	2	6
„ 8,......	475	5	11
Workshops,......	11,137	12	6
Total Rs...	45,139	4	0

2. The progress report of Districts 1, 2, and 3 with a Summary are also forwarded.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP, TRIVELLUM,
13th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
27th September, 1854.

No. 311.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to your letter, No. 204, of the 9th instant, respecting the Accounts of the months of May and June, I have the honor to forward copy of one from the

T

19th September, 1854. District 2.

Chief Engineer offering his explanation of the items noticed by you. The expenditure on Stations, Rupees 201-4-8, not reported in Form E, not having been noticed by Mr. Bruce, the necessary information has been called for from him.

2. Form D of District No. 7 for the month of May is herewith returned corrected.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP, TRIVELLUM,
13th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 204.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Before submitting to Government the several Accounts, &c., received with your letters Nos. 216 and 245 of the 28th June and 26th July respectively, I have the honor to call your attention to the following apparent irregularities and to request explanation thereof.

District 1.

Progress (E) in Station Buildings 312 yards. No Account of expenditure (D) under the head "Stations." Tappal Runners charged in Form D, see my reply dated the 28th April last, No. 77, to your letter No. 85, of the 20th March.

District 2.

Expenditure under the head of Sundries several times recorded. See my letter to your address, No. 103, dated the 15th October 1853.

The Resident Engineer doubtless has particulars of these sundries and there can be no reason why they should not be given as well as any other details whether in the body of the Account or among the Vouchers.

The term Miscellaneous is used as a minor heading is Rs. 337-2-10, said to be expended upon "Miscellaneous." The Account should state more particularly the nature of the Miscellaneous work.

Expended in Station (D) Rs. 201-4-8.

No progress reported (E).

District 3.

Sundries introduced under Brick-making and Bungalows without Voucher.

District No. 7.

* Form D returned for correction.

An advance to Contractor Rs. 10 introduced.*

No objection can be made to the disbursement if it suits the arrangements of the Railway Company to make it; but no advance should be entered into these Accounts for the sanction of Government; as it does not become an "expenditure" until adjusted in your Accounts with the Contractor in question.

District 8.

Sundries—without voucher—again introduced as well as the term "Miscellaneous, without further explanation. The pay of Conicopillay for 29 days might have been entered—if assisting in the Survey—in Form B, if on Bungalows or other Miscellaneous work—such works might have been specified.

Workshops.

No allusion made in the monthly progress report to the nature and amount of work executed here.

Madras Station.

Rupees 15,610-1-8 has been already expended; of which Rs. 8,251, was the disbursement for May. No brick or other Stores are entered in this Account either for the current month or as previously expended.

In form B, for Districts 13 and 14 sundries are entered without voucher. The sums are small but the manner of recording expenditure not the less irregular and apparently unnecessary.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP, PALMANAIR,
9th September, 1854.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Coimbatore, 19*th September*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of Colonel Pears' letter No. 204, and I shall endeavour to answer it as satisfactorily as I can in the absence of the accounts themselves.

District 1.—The expenditure upon Stations comes under the General Head of "Brickwork" in Form D. It is more convenient for me to keep it in this way but if desired I can easily show in the Abstract the Expenditure upon Stations separate from the other Brickwork.

Tappal Runners entered in Form D, is an oversight, which shall be remarked in future.

District 2.—Regarding Sundries I cannot speak without seeing the accounts, but my impression is that a detailed Statement of all sundries accompanies each account. We have no "expenditure that cannot be accounted for," and if a complete detailed Statement was not sent it was an oversight.

The same remark applies to the other cases referred to.

I have repeatedly drawn the attention of the Engineers to the necessity of keeping the Miscellaneous Account as small as possible.

District 7.—The entry of an advance was irregular and I shall have the account altered—the account was prepared during my absence from head quarters; and I allowed it to pass, not being of any great importance, to save time.

District 8.—There are a variety of duties in which a Conicopillay is employed preparatory to the commencement of Construction, when it is difficult to place him under a definite head: this only occurs before the work is actually begun.

Workshops.—A regular return is now sent monthly of work done in workshops.

Madras Station.—The omission of stores expended has, I think, been rectified in succeeding months.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On letters from the Agent of the Madras Railway Company, (Nos. 216, 245 *and* 311, *dated severally the* 28*th June* 26*th July and* 27*th September* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent with these letters submits for sanction the accounts of Expenditure in the Railway during the month of May, and furnishes explanation called for on several points.

From the tenor of the Chief Engineer to the Agent dated the 19th Ultimo it may be hoped that there will be less informality in the preparation of these accounts in future.

The total expenditure during the month of May for which sanction is now solicited was Rupees 45,862-9-3.

The Contingent charges (Form B) connected with Surveying and Superintendence amounts to Rupees 723-5-3. Certain informalities in these accounts have been brought to the notice of the Agent; and some explained by the Chief Engineer. I would recommend that they be sanctioned.

District 1. Construction.

The Construction Account for District 1, for the month of May amounted in the aggregate to Rupees 19,738-7-9, including the Madras Station Buildings, viz.

Earthwork,.. **Rs. 3,809 14 7**

The progress Report (E) shows 72,535 cubic yards executed during the month, giving about 66 yards to the pagoda.

Brickwork and Masonry,.................................. **Rs. 6,078 12 11**

Of this sum Rupees 1701-11-9 are charged to the Canal Bridge, making a total expended on this work up to the end of May of Rupees 11,901-5-3. I am in correspondence with the Agent regarding the Brickwork in this District, and the causes of the excess over the Estimate and his explanation will be submitted shortly. I fear there has been a want of efficient superintendence on this Canal Bridge.

Mr. Bruce has unfortunately lumped up the "Stations" in this item of "Brickwork and Masonry," I have requested that this may not be done in future. I would recommend that this be also passed to the full amount of Rupees 6078-12-11.

The remaining items are :—

Madras Station, Rupees 8,351-0-4.

Permanent Way,....................................	Rs.	1,227	5	3
Fencing,....................................	„	231	14	1
Miscellaneous,....................................	„	39	8	8
Madras Station,....................................	„	8,351	0	4
Total on District No. 1..........	„	19,738	7	9

District 2. Construction.

District No. 2.

Total expended on construction during the month of May, Rupees 11,121-8-11.

This account calls for no particular remarks. The Earthwork is rather more expensive than usual, being about 45 yards to the Pagoda, but the ground is reported generally hard and many of the banks high.

The Agent's attention has been drawn to an irregular entry of "Miscellaneous."

This account may be passed.

District 3.

District No. 3.

Construction,.................................... Rs. 2,535 14 5

Recommended to be sanctioned.

District 7.

District No. 7.

Construction Account,.................................... Rs. 127 2 6

District 8.

District No. 8.

Construction Account,.................................... Rs. 475 5 11

The expenditure is chiefly on Bungalows and the rates appear to be reasonable.

Workshops. Workshops,.................................... Rs. 11,137 12 6

The working of these Establishments can only be judged by the periodical (half-yearly) Return of Stores, &c., made up. This is now due for the half year ending the 30th of June. Meanwhile it appears that the rates charged for materials and labour in the vouchers accompanying this statement are moderate.

Rupees 45,862-9-3.

I recommend that the above expenditure be sanctioned and the Agent permitted to take credit for the amount; but it is proper that I should observe that in some respect the Railway Company's Engineers have not yet brought their prices down so low as we are accustomed to see them in the public work Department. It was not to be expected that they would, in the earlier stage of their undertaking, and I have been anxious not to criticize with undue severity the charges incurred in the execution of a work of great extent through the agency of men entire strangers to the country. It is my intention, however, to call the Agents, attention to some of these rates and to the practicability of reducing them by increased vigilance on the part of the executive officers.

CAMP, TRIVELLUM,
13th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
19*th August,* 1854.

No. 274.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Contingent Accounts of the Engineer Department for the month of June, amounting in the aggregate to Rupees 779-1-8.

				RS.	A.	P.
General	Superintendence,			94	4	0
Special	„	District	1,	34	1	0
„	„	„	2,	75	0	0
„	„	„	3,	105	10	9
„	„	„	4,	57	3	0
„	„	„	5,	41	14	6
„	„	„	7,	121	2	6
„	„	„	8,	128	15	4
„	„	„	13,	52	5	6
„	„	„	14,	65	9	1
			Total Rs...	779	1	8

2. With reference to your letter No. 169, dated 31st July, regarding a double charge of two days for the Apothecary in District 8, I transmit herewith copy of the correspondence that took place between myself and the Chief Engineer. Mr. Bruce you will observe though called upon has not explained how the overcharge in question occurred. It is possible however, as surmised in my letter of the 4th August, that it was owing to the order for Peppin's removal not reaching him earlier. Mr. Bruce, I beg to observe, ought to have adjusted this matter timely, when he saw the probability of a double charge occurring. At present it seems unavoidable, and I hope that under the circumstances of the case it will not be objected to. The salary of Burgonah from the 25th, having been properly charged in Form A, the excess for the 23d and 24th, appears in Form B, amounting to Rupees 3-3-7.

* To Chief Engr. (extract) 20th May 1854, No 204.
To do do. 25th July No 292.
To do. do. 4th Aug. No. 305
From do do. 8th do.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 24*th October,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Extract of a letter to the Chief Engineer, dated 20th May 1854, *No.* 204.

I beg to inform you that an Apothecary named W. L. Burgonah has been appointed by Mr. Sanderson in lieu of Mr. Peppin. He will leave this for Darampoory to join Mr. Beattie, on Tuesday, the 23d instant, from which date his salary will begin.

Extract of a letter to the Chief Engineer, dated 20th May 1854, *No.* 292.

Apothecary Burgonah.—This individual's salary is payable from the 23d of May as intimated by this office in a letter of the 20th idem. The charge from the 22d cannot

therefore be admitted. The date has accordingly been altered from 22d to 23d and the amount from Rupees 66-2-0 to Rupees 64-8-3, as well as the total from Rupees 1,189-13-8 to Rupees 1,188-3-11.

MADRAS RAILWAY AGENCY OFFICE,
4th August, 1854.

No. 305.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. I have the honor to forward copy of a letter from the Consulting Engineer, dated 31st July, No. 169.

2. According to my letter dated 20th May intimating the appointment of Apothecary Burgonah, his salary was to commence from the 23d of May (a date fixed by Dr. Sanderson).

3. In the abstract for the month of June the charge was originally made to the 22d, and in accordance with my letter above referred to the date when submitting the abstract to Major Pears was altered to the 23d.*

* Vide letter to Chief Engr. dated 25th July, No. 292.

4. In the previous abstract of the month of May, pay for the former incumbent (Peppin) was drawn to the 24th. There is consequently a double charge for the 23d and 24th which ought to have been explained when submitting the abstract for the month of June. Most probably the charge for Peppin to the 24th was unavoidable, because the order for his removal could not reach him earlier, if so the circumstance should have been reported to this Office.

5. To remedy the case as it now stands the only way is to enter the charge for Burgonah for the 23d and 24th in the Contingent Bill: the charge though still double will be submitted to the Consulting Engineer together with your explanation.

6. The abstract and Contingent Bill are retained and I request that fresh ones (containing in the former pay from the 25th and in the latter for the 23d and 24th) may be prepared and sent.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 8th August, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

With reference to your letter, No. 305, dated the 4th Instant, I beg to hand you prepared afresh, Forms A and B for District 8, for the month of June last.

I have, &c.
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Extract and Copies.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
23d August, 1854.

No. 276.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit for sanction the Construction Account, Form D, of the month of June, amounting in the aggregate to Rs. 44,133-13-7.

District No. 1, including Madras Terminal Station,.......	Rs.	17,719	7	2
,, ,, 2,..	,,	11,579	12	1
,, ,, 3,..	,,	2,104	4	11
,, ,, 7,..	,,	230	3	9
,, ,, 8,..	,,	393	1	1
,, ,, 13,..	,,	88	6	0
,, ,, 14,..	,,	423	5	0
Workshops,...	,,	11,595	5	7
	Total Rs ..	44,133	13	7

2. The Progress Reports of Districts Nos. 1, 2 and 3, with a summary are also forwarded.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, *24th October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On letters from the Agent of the Madras Railway Company, Nos. 274 and 276, dated severally the 19th and 23d August 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits and recommends for sanction the Accounts of expenditure on the Railway, during the month of June last, viz:—

Contingencies connected with Superintendence,..........	Rs.	779	1	8
Construction Account,..	,,	44,133	13	7
	Total Rs...	44,912	15	3

2. Among the Contingencies.

The only entries in these Bills calling for notice are. On District 3, Rupees 7, "moving Mr. Coate's furniture" which is inadmissible. On Districts 1 and 14 are charges for "discount." These charges were noticed by Government in an Extract from Minutes of Consultation, No. 181, dated 18th August, 1854, and explained, in my

letter, No. 56, of the 21st Instant. I would recommend that—disallowing the above Rupees 7, charged in District 3—these Contingent Accounts be passed to the extent of Rs. 772-1-8.

3. Construction Account, Rs. 41,133-13-7.

District 1, including Madras Station, Rupees 17,719-7-2, viz.:

Earthwork,..	Rs.	3,504	8	3
Brickwork and Masonry,..............................	„	4,689	14	1
Permanent Way,..	„	2,199	0	2
Fencing,...	„	242	13	6
Miscellaneous,...	„	16	4	0
Madras Station,.......................................	„	7,066	15	2

I recommend that these expenditures be passed; but take the opportunity of making known to Government the extreme difficulty I still experience in getting these accounts prepared with reasonable care and accuracy. The Government will observe that the expenditure in Brickwork and Masonry has already exceeded the estimate. This is in some measure, and may be wholly, owing to the Chief Engineer having mixed up the expenditure in stations, the estimates of which are not yet passed, with that on small bridges the estimates for which have been passed, and which constitute an expenditure of a totally different character from that of the stations. I am in correspondence with the Agent upon the subject, and shall make further report in future: noticing one other point, viz. the imperfect manner in which the third column in these Statements D is filled. Where buildings are constructed and money expended on bricklayers there must have been an expenditure of bricks. Under the column "Stores expended" these should have been entered against "Madras Station." No such entry is made. In like manner opposite "Permanent Way" when sleepers have been adzed, bored and spiked, there is an expenditure of "Stores," but none are entered. The aim and object of this simple form of accounts has been repeatedly explained to the Agent; and I would suggest that his attention be called to the necessity of preparing these accounts with greater care and accuracy in future.

4. *District No.* 2.—Construction Account, Rupees 11,579-12-1, viz.:

Earthwork,..	Rs.	3,644	4	6
Brickwork and Masonry,..............................	„	6,729	9	2
Permanent Way,..	„	884	13	7
Miscellaneous,...	„	321	0	10

These expenditures appear well accounted for; but there are as usual irregularities in the preparation of the Statements.

I have already called the attention of the Agent to the impropriety of entering any expenditure without more particular description than that of "Miscellaneous." I would recommend that the account for District 2, be passed.

5. *District* 3.—Construction Account, Rupees 2,104-4-11, viz.:

Earthwork,..	Rs.	642	11	4
Brickwork and Masonry,..............................	„	890	9	9
Miscellaneous,...	„	570	15	10

The Earthwork of which 8,265 yards were performed in the month of June is expensive, being at the rate of 42 yards for 3½ Rupees. As the work advances and some competition is excited it may be hoped either that the price will fall or the work advance more rapidly than it has hitherto. I would recommend that the Account be passed in full Rupees 2,104-4-11.

6. *District No.* 7.

Construction Account,................................	Rs.	230	3	9

District No. 8.

Construction Account,................................	„	393	1	1

District No. 13.

Construction Account,................................	Rs.	88	6	0

District No. 14.

Construction Account,................................	,,	423	5	0

Workshops.

Madras,..	,,	10,018	7	4
Palghaut,..	,,	797	13	8
Salem,...	,,	779	0	7

At the Madras Workshop large purchase of tools and materials for general purposes have been made.

The expenditure in these four Districts and the Workshops call for no further observation and with the exception of the sum of Rs. 7, alluded to above as expended in District 3. I would recommend that the whole of the accounts be passed—to the extent of Rupees (44,905-15-3) forty-four thousand nine hundred and five, Annas fifteen and Pice three.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
24th October, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 233.

Extract from the Minutes of Consultation, dated 6th November, 1854.

Read the following observations of the Consulting Engineer on letters from the Railway Agent.

(Here enter 13th and 14th October 1854, Nos. 236 and 248.)

The Right Honorable the Governor in Council sanctions the Accounts of expenditure on the Madras Railway during the months of May and June 1854, amounting together to Rupees (90,768-8-6) ninety thousand seven hundred and sixty-eight, Annas eight and Pice six, being exclusive of the sum of Rupees seven, charged under the head of Contingencies for June for "moving Mr. Coate's furniture," which the Government think, with the Consulting Engineer, is inadmissible.

May.			
Contingencies connected with Superintendence,.	723	5	3
Construction Account,...	45,139	4	0
Rupees...	45,862	9	3
June.			
Contingencies connected with Superintendence,.	772	1	8
Construction Account,...	44,133	13	7
Rupees...	44,905	15	3
Total Rupees...	90,768	8	6

2. The Governmemt regret to be obliged again to notice the irregularities pointed out by Col. Pears in the preparation of the Statements referred to in his remarks on the Accounts for June last; and in calling the attention of the Agent to the necessity of regularity and accuracy in preparing these Statements, desire that he will impress upon the officers of the Railway Company subordinate to him that a correct rendering of their accounts, according to the Forms established under due authority, is a very important part of the duty required of them.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 254.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

No. 233, dated 6th November, 1854.

I have the honor to forward for your information an Extract from Minutes of Consultation, as per margin, and to convey to you the authority of Government for taking credit in the Engineer Department for the following sums of expenditure during the months of May and June 1854.

* * * * * * * *

Total Rupees ninety thousand seven hundred and sixty-eight, Annas eight and Pice six.

You will observe that in the Accounts, Form B, in District 3, a sum of Rupees seven has been disallowed having been charged for certain expenditure on Superintendent Coate's private account.

An extract of my report to Government, dated 24th October, is herewith forwarded for your information.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
10*th November*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
23*d August*, 1854.

No. 221.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Contingent Accounts of the Engineer Department for the past month, amounting in the aggregate to Rs. 937-6-10.

				RS.	A.	P.
General	Superintendence,			131	8	6
Special	„	District No.	1,	26	4	0
„	„	„	2,	57	0	0
„	„	„	3,	63	14	0
„	„	„	4,	92	3	1
„	„	„	5,	75	8	11
„	„	„	6,	68	3	6
„	„	„	7,	121	5	6
„	„	„	8,	95	3	0

		RS.	A.	P.
Special Supt. District No. 13,	....	49	5	6
„ „ „ 14,	....	156	14	10
	Rs...	937	6	10

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 4th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
1st September, 1854.

No. 292.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to submit for sanction the Construction Accounts, Form D, of the month of July, amounting in the aggregate to Rs. 34,112-10-3.

District No. 1, including Madras Terminal Station,....	Rs.	11,495	5	11
„ „ 2, ...	„	10,523	4	1
„ „ 3, ...	„	4,493	11	0
„ „ 7, ...	„	325	9	8
„ „ 8, ...	„	637	0	9
„ „ 13, ...	„	64	10	0
„ „ 14, ...	„	64	3	10
Workshops, ...	„	6,508	13	0
	Rs..	34,112	10	3

2. Progress Reports of Districts 1, 2 and 3, and the Madras Terminal Station with a Summary are herewith forwarded.

To Chief Engineer, 22d August 1854, No. 326. From do. 26th do. do.

3. I also forward copy of the correspondence, marginally noted, relative to certain omissions in the Accounts.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 4th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George,

MADRAS RAILWAY AGENCY OFFICE,
22*d* *August*, 1854.

No. 326.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

* Mins. of Con. 16th May 1854, No. 108.
Letter from Cons. Engr. 18th do. do. No. 102.
Copies forwarded to Chief Engr. 22d May.
† Mins. of Cons. 4th July 1854, No. 153.
Copy sent to Chief Engr. 8th July.

1. With reference to the communications, marginally noted, relative to the sums of Rupees *606-7-3, and Rupees †364-12-1, sanctioned by Government on account of Bungalows in District 2, I beg to observe that the sums in question have not been entered in the next Monthly Construction Account as directed by the Government and the Consulting Engineer: the former has not appeared in the subsequent account of the month of July.

From Cons. Engr. 19th June 1854, No. 137, copy sent to Chief Engr. 22d June 1854.

2. I have also to observe that the charge of a Conicopillay Rs. 10, passed in Minutes of Consultation, 13th June, No. 129, has not been entered in the "next Contingent Bill" as directed by Col. Pears, nor in the subsequent Account of the month of July.

* Copy sent to Chief Engr. 30th May.

3. The Commission for money "borrowed on emergency" Rupees 42 passed in Minutes* of Consultation, 26th May, No. 117, though not directed to be entered in the next Monthly Account should have been done so, in accordance with the instructions issued in the preceding cases.

4. I beg that all these adjustments may be made in the Accounts of the month of August.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 26*th* *August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. The alterations shall be made in the August Accounts as desired in your letter, No. 326.

2. These sums never having been struck out of the Accounts, I was under the impression that it was unnecessary to enter them again.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
28th November, 1854.

No. 386.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.
Consulting Engineer.

SIR,

1. With reference to your letter, No. 236, of the 26th ultimo, I beg to retransmit the Accounts, Form D, of the month of July, with the explanation of the Chief Engineer and the item of "Stores expended" inserted.

1st November.

2. No bricks are entered in Districts 7, 8, 13 and 14, as none had been expended.

3. The explanation touching the amalgamation of Stations alluded to by Mr. Bruce in the 4th para. of his letter, is contained in his letter dated the 17th ultimo, respecting the Canal Bridge, a copy of which was forwarded to you on the 24th instant.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
4th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 1st November, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge Col. Pears' letter, No. 236.

2. The pay of the Writer was increased by my orders, as I placed him in charge of all the Accounts connected with the Workshop, Stores, and Terminal Station; he is not merely a Writer and is well deserving of the pay he receives.

3. It is almost impossible to give specific details of each cooly employed, and to do so would accomplish no good purpose; it must be remembered that 78 coolies is only two coolies throughout the month employed, on a district of 25 miles long.

4. The amalgamation of stations has already been explained; as Col. Pears' objection did not arrive in time to make the alteration in September Accounts, without causing great and useless delay, I proposed to make the alterations in the current month, and add a Statement of the whole from the beginning.

5. The price Rupees four per 1000 for bricks is the usual price, and I am quite satisfied that no man, whatever be his local experience, could get our size of bricks

in that locality, good, for less money. I raised the price myself from Rupees 3-8-0 to Rupees four because men could make nothing at the former rate.

6. Annas 12 is too much for ordinary bricks (moulding,) but there are a few (750) made for a special purpose.

7. It certainly seems very unnecessary to send vouchers for sums of ten and eight Annas; it does not afford the smallest protection.

8. The return of Stores expended shall be added and the Accounts returned.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On letters (Nos.) 277, 292 and 386 from the Agent of the Madras Railway Company, dated respectively the 23d August, 1st September and 28th November 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwarded the Construction Accounts for July on the 1st of September. They were after examination, returned for correction, certain important entries, the necessity of which had been frequently explained being omitted. The total amount expended during the month of July is Rupees 35,050-1 1

Form B, Districts 1, 2, 3, 4, 5, 6, 7, 8, 13 and 14, and Genl. Superintendence.

2. Contingencies connected with Superintendence amount to Rs. 937-6-10. This expenditure appears to be unobjectionable.

CONSTRUCTION ACCOUNT.

3. *District No.* 1.—Rs. 11,495-5-11. This sum includes the "Madras Station."

4. The expenditure on the Canal Bridge continues, and has exceeded the estimate, in a considerable amount. I have a special Report on this work which will be submitted in a few days.

5. Mr. Bruce, in his letter to the Agent, with reference to my remark of 78 Coolies charged for "Miscellaneous" work, expresses an opinion that to give specific details of each cooly employed would accomplish no good purpose. The Agent forwards this observation without remark. It will be readily seen that this is a mistaken view of the matter. It is not a specific detail of each coolies work that is required, but the division or section of the work on which he is employed.

6. The form of account now in use affords ample room for the entry of all such expenditure. We should never in the transaction of our private business admit that because a sum was small it should be unaccounted for. "Contingencies," "Sundries," are admitted in *Estimates*, because such documents are prospective calculations; and we must allow a margin for those things which it is impossible to foresee. On the other hand Accounts rendered are retrospective: and in all such cases, to enter an expenditure under the head of "Sundries," or "Miscellaneous" is to confess that we do not know how it has been expended.

7. No expenditure whatever should be recorded except such as can be entered under some distinct head or division of the work.

8. There may be wisdom in a liberality that disregards trifling discrepancies in the

attainment of a definite and intelligible object: but such entries as that now referred to are simply evidences of laxity in the transaction of business and their admission would, I conceive, open the door to more serious evils.

9. The total expenditure in this District (exclusive of the Madras Station) amounts in round numbers to Rs. 133,000. The estimate was Rs. 296,766. The chief work remaining to be executed is "Ballasting" and "laying Permanent Way" and upon this it will be observed Rs. 10,000 had been already expended.

10. The *expenditure in Brickwork on this District up to the end of July amounted to Rs. 61,149-9-2 exclusive of the timber work (Rs. 3,500) supplied to the Canal Bridge. The total estimate sanctioned is Rupees 50,082-12-6.

11. The estimate however did not include Stations—a small portion of the expenditure in which has been most inconveniently mixed up with that for Drains, Bridges, &c. There can be no doubt however that the Brickwork in this District will exceed the Estimate: but the Chief Engineer expects that the Estimate will, in the aggregate, be sufficient. Explanation regarding the Brickwork, received lately from the Agent, will be submitted with a separate report in a few days.

12. *District No.* 2.—Rupees 10,523-4-1.

The expenditure appears unobjectionable. That upon the works of Masonry has exceeded the Estimate, but the amount of work done have exceeded it also. I have called for a Report upon the number and description of drains built, having considered it necessary to give instructions myself at various times for the increase of that number.

13. The sanctioned estimate for this district amounted to Rs. 317,690. The expenditure has reached Rs. 114,550-8-10.—Rs. 3,226-13-6 have been expended on the Permanent Way—the estimate of which including carriage of materials amounted in round numbers to Rs. 120,000. The works on this district are generally in such a forward state that I fully expect the original estimate will be found sufficient for their completion.

14. *District No.* 3.—Rupees 4,493-11-0.

This expenditure is unobjectionable, the prices are fair. The cost of sinking Wells being the only charge that appears high. Some latitude must be given in a work of this nature where it is of so great importance to press the work forward. The progress on the Poiney Bridge has been very creditable.

15. *District No.* 7.—Rupees 325-9-8.

District No. 8.—Rupees 637-0-9.

District No. 13.—Rupees 64-10-0.

District No. 14.—Rupees 64-3-10.

The work in these Districts is confined almost entirely to the construction of Bungalows and clearing the line, there is no objection to these accounts.

16. *Workshops*—Rupees 6,508-13-0.

There is no account of work done in these Shops neither can there be, except at stated periods when the accounts are made up and the articles priced. The several articles, doors, windows, lintels, &c., entered in Form D under the head of Stores are issued from these Workshops, and will be priced and charged to each work hereafter.

17. The amount for which it is now recommended that the Agent have permission to take credit as expended during the month of July is—

Contingent Expenses,	Rs.	937	6	10
Construction,	„	34,112	10	3
	Rupees .	35,050	1	1

Rupees thirty-five thousand and fifty, Anna one and Pie one.

MADRAS, 4th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 263.

Extract from the Minutes of Consultation, dated 19*th December* 1854.

Read the following observations of the Consulting Engineer on letter from the Railway Agent.

(Here enter 4th December 1854.)

Contingencies.....	Rs.	937	6	10
Construction.....	„	34,112	10	3
Total Rupees..		35,050	1	1

The Right Honorable the Governor in Council sanctions the Accounts of expenditure on the Madras Railway during the month of July 1854, amounting to Rupees (35,050-1-1) thirty-five thousand and fifty, Anna one and Pie one.

The views of the Consulting Engineer respecting the entry of expenditure under the head of "Sundries," or "Miscellaneous" are obviously correct, and the Government are surprized that the Chief Railway Engineer has advanced opinions of an opposite character.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.
With Nineteen Enclosures.

MADRAS RAILWAY AGENCY OFFICE,
1*st February,* 1854.

No. 26.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

23d January, 1854.

1. I have the honor to forward copy of a letter from the Chief Engineer and to request that the Government will be pleased to sanction the disbursement of the sum of Rupees 30,000 required on account of Districts No. 1 and 2.

2. The receipts on account of these Districts to this date is Rs. 1,32,500, and the Expenditure to the end of October, up to which date the Construction Accounts have been submitted to you, is Rs. 52,877-11-2, there thus remains a balance of Rs. 79,622-4-10 to be accounted for in the Accounts of the following months. From Mr. Bruce's letter it appears that the balance now in hand amounts only to Rs. 5,650-10-9 in District No. 1, and to Rs. 2,954-11-0, in District No. 2. The Accounts for the month of November were received from the Engineer Department but they have been returned for correction; those for December have not yet reached me.

3. The amount required for District No. 2, Rs. 10,000, will require to be made payable at the Talook Cutcherry of Trevellore, District of Chingleput.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 6th *February*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Coimbatore, 23d January.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you a statement of expenditure on Districts 1 and 2, and to request further sanction for Rupees 15,000 in each case.

That for District 2 to be in Accountant General's Bills payable at Trevellore.

1st District.

By Cash received,		83,750 0 0	
As per Form D, No. 8, for December,	58,866 10 1		
Advanced since,	19,232 11 2		
Balance in hand,	5,650 10 9		
		83,750 0 0	
			5,650 10 9

2d District.

By Cash received,		4,8750 0 0	
As per Form D, No. 6, for December,	25,721 15 8		
Advanced since,	20,073 5 4		
Balance in hand,	2,954 11 0		
		48,750 0 0	
			2,954 11 0
		Total	8,605 5 9

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter, No. 26, from the Agent of the Madras Railway Company, dated 1st February 1854.

OBSERVATIONS FOR THE CONSULTING ENGINEER.

1. This is an application for a further advance of Rupees 30,000 upon Districts No. 1 and 2.

There appears still upon these two Districts an unadjusted balance of Rupees 79,622. No accounts have been received in this office since these for October last.

2. I would not recommend, under present peculiar circumstances when the people of the country may be anxiously seeking employment, to withhold advances; but I consider it very desirable that the attention of the Agent should be drawn to the necessity of submitting the accounts with greater punctuality. The system which the Chief Resident Engineer has established is such, that if the Resident Engineers pay proper attention to this important part of their duty, and if their subordinates are properly qualified men, there can be no good reason for delay in the preparation of these accounts: while the Agents own establishment appears amply sufficient, numerically, to prevent the possibility of delay in their examination. I would recommend that the Sub-Treasurer be authorized as usual to make the advance on Districts 1 and 2, viz., Rupees 15,000 upon each.

3. The subject of the 3d Para. of the Agents' letter should not have been noticed in his communication to Government.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
6th February, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 40.

Extract from the Minutes of Consultation, dated 16th February, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 6th February 1854, No. 35.)

Para. 1. The Sub-Treasurer is authorized to make the further advance of Rupees (30,000) thirty thousand, requested by the Agent of the Railway Company on account of the expenditure in Districts Nos. 1 and 2.

2. The Right Honorable the Governor in Council will regret to be obliged to move the Honorable Court to call upon the Railway Directors in England to take such notice of the neglect of the Subordinate officers as will ensure the Accounts of expenditure being more regularly prepared and furnished in future; and he must look to the Agent to exercise his authority over those officers with a view of obliging them to attend to this very important part of their duties, as it is manifest that a continuance of the present irregularity must lead to very serious confusion.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
24th February, 1854.

No. 54.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to the Extract from the Minutes of Consultation, dated the 16th Instant; and forwarded by you for my information on the 17th, I have the honor to send you the accompanying copy of a letter from the Chief Railway Engineer of the Railway.

21st February, 1854.

2. Of course I do not know the particular Accounts alluded to, but I presume that reference is made to the Statements of balances as per last Account when the Chief Engineer has applied for fresh advances. I suppose also that allusion may be made to the delay in furnishing explanation of Accounts for September. I do not imagine that the Government have confined their observations to the Accounts furnished by Messrs. Wilson and MacNair.

3. I cannot, I think, do better than to furnish you with extract from my letter to the Board of Directors of yesterday's date. This was written before the receipt of your letter passing the September Accounts, and which will be forwarded to England by the next Mail.

No. 32, Paras 10, 11, 12 and 13.

4. I beg leave to enclose a Memorandum showing the dates of the receipt of some Accounts. Of course an Account cannot be said to be received until forwarded correctly. I also trouble you with copy of a letter sent by me yesterday, with reference to the Forms D and E from Districts 1 and 2 for the month of January; to show how delay occurs in forwarding to you the monthly Accounts; as of course I cannot send them to you in an incorrect shape so far as I am able to prevent it.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

MADRAS, *3d March*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 21st February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I am at a loss to understand the Minutes of Council, dated 16th February 1854.

2. What data the Right Honorable the Governor in Council had before him when he spoke so severely of the neglect of the subordinate Officers in not rendering their Accounts with regularity, I do not know.

3. In noticing it I beg respectfully to say that His Excellency has been altogether misinformed and that the Accounts are rendered with commendable punctuality

4. Mr. Wilson's never reach me later than the 6th and Mr. MacNair's than about the 9th of the month.

5. They might perhaps be a day or two earlier, but considering the multiplicity of detailed Accounts which are to be checked and put into shape before they reach me, there is certainly nothing deserving of censure.

6. It sometimes happens that I have to make inquiries regarding certain points, which with the necessary examination and copying in my Office causes delay of a few days before they are sent to you.

7. There is not a Construction Account which has not been rendered up to January 31st.

8. I regret that a misconception should have influenced the Minute of Council regarding the increase of salary applied for in the case of the Gentlemen above alluded to; and I hasten to remove the false impression.

I have, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

Extract of a letter to the Board of Directors, dated 23d February 1854, *No.* 32.

Para. 10. I beg to call the particular attention of the Board to the Extract from the Minutes of the Government, dated 16th Instant, in which they express their desire that the Agent should exert his authority for the more punctual rendering of the Engineering Accounts. I shall be much obliged by your informing me in what manner I am to exert authority. I call upon the Chief Engineer for an Account or an explanation; and if he does not afford it, I have no remedy beyond representing the matter to the Board, and I always transmit copies of all correspondence. I will advert to the delay in forwarding the Accounts for September. These are not passed by the Consulting Engineer because the expense of building Bungalows in District No. 2, is objected to on account of the excess of expenditure beyond the amount sanctioned. The letters noted in the margin show how often I have called for explanation, and still it is not afforded. Yet, what could be more simple than to state the facts? I believe the Bungalow now built is large and better than was allowed for; but this should be candidly stated, and, if need be, Mr. Wilson should be called upon to pay the difference himself. I cannot but think this would be fair and consistent with the utmost public liberality. At all events the Accounts ought not to be delayed for want of explanation.

25th Nov. 1853, No. 188.
9th Jan. 1854, No. 9.
3d Feb. „ No. 29.

11. In regard to Returns of Stores I have applied for them several times without obtaining them.

12. I have an account of the dates upon which the several monthly Returns have been received. One great cause of delay in forwarding them has been, that in a great many instances I have been obliged to return the Statements for correction.

13. I do not wish to attribute blame where it is not due, and I would make great allowance for the first working of a new Office. Still I am of opinion that punctuality in rendering Accounts and explanations should not be neglected. I should be glad to see more regularity, and I only desire to exonerate myself. I regret exceedingly that now at the end of February I cannot transmit my Accounts for the month of September and this for want of a little explanation of the most simple nature.

(True Extract.)

(Signed) E. SMALLEY,
Agent.

MEMO. showing the dates of receipts, &c., of certain Accounts connected with the Engineer Department.

NATURE OF ACCOUNT.	Date when received.		Date when returned for correction.		Date when received back with corrections.		Date of Despatch to Consulting Engineer.	
1853.	1853.		1853.		1853.		1853.	
September.								
Form B, of Genl. Superintendence and Districts 1 and 2	October.	4	....	......	....	......	October,	6
Form D, District No. 1	,,	24	October,	27	October,	28	,,	31
Do. ,, 2	,,	15	....	......	....	......	,,	,,
October.								
Form B, Gl. Sup. and Dst. 1. & 2.	November,	3	....	......	....	......	November,	10
Form D, District No. 1..	,,	23	November,	25	November,	28	,,	28
Do. ,, 2	,,	14	....	......	....	......	,,	,,
November.					1854.		1854.	
Form B, Gl. Sup. and Dst. 1. & 2.	December,	9	December,	10	January,	3	January,	11
Do. B, District No. 3	,,	11	....	......	....	......	,,	,,
Do. D, ,, ,, 1, & 2	,,	14	January,	4	February,	7	February,	13
Do. E, ,, ,, 1, & 2..	,,	27	,,	,,	,,	,,	,,	,,
December.	1854.							
Form B, Genl. Superintendence.	January,	21	....	......	....	......	February	1
Do. District No. 1	,,	19	....	......	....	......		
Do. do. ,, 2	,,	10	January,	14	January,	29		
Form D, do. ,, 1 .... Form E, do ,, 1	February,	3	February,	8	February,	11	,,	13
Form D, and E, District No. 2.	,,	3	....	......	....	......	,,	,,
1854.								
January.								
Form B, Genl. Superintendence. Districts 1, 2, 3, 14 and 15.	February, ,,	18 7 & 8	....	......	....	......	February,	23
Form D, District No. 1	,,	21	February,	23			Recd. back again.	
Form D, ,, ,, 2	,,	13	,,	17	February,	19	February,	23
Form E, ,, ,, 1	,,	21	,,	23				
Do. ,, ,, 2	,,	18	,,	,,				

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
23d February, 1854.

No. 66.

FROM E. SMALLEY, ESQUIRE,
Agent.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In returning the Construction Accounts and the Progress Reports of Districts Nos. 1 and 2 for the past month, I beg to observe that the cubic yards opposite certain miles under the head "Earthwork" in the Construction Account do not agree with those entered in the Progress Reports, also that the items, Rupees 7-15-2 under the head labour "Canal Bridge," in District No. 1, "Miscellaneous as per Account" should be under the head "Materials" and Rupees 40-14-4 should be "Labour," not "Materials." I request therefore that they may be corrected and returned.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MEMO.

District No. 2.	*Done during the month.* *Cubic yards.*	*Should be* *Cubic yards.*
7th Mile	4,045	3,158
13th „	7,444	11,272
14th „	6,388	5,455
15th „	2,880	2,000
16th „	4,465	3,200
17th „	6,612	7,080
18th „	735	220
19th „	2,315	3,407
20th „	220	None
21st „	3,388	1,828
	Total as per last Report.	
9th „	12,035	11,035
13th „	17,151½	18,151
	District No. 1. Done during the month.	
16th „	911	2,111
	Total as per last Report.	
2*d* „	78,763	72,704

Fencing Lineal yards 3,272, not entered in last report.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 54, *dated* 24*th February* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards an explanatory letter from the Chief Engineer of the Railway regarding the delay in forwarding the Accounts. I have only to observe in reference to these documents that the statement furnished by the Agent shows that the Account for November (Form D) did not reach my Office till the 13th of February; and that

a letter to the Agent, dated the 2d of December, regarding the cost of Bungalows was replied to by that Gentleman on the 22d of February.

MADRAS, 3d *March*, 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

TO THE CHIEF SECRETARY TO GOVERNMENT, *Fort St. George.*

MADRAS RAILWAY AGENCY OFFICE, *24th February*, 1854.

No. 53.

FROM E. SMALLEY, ESQUIRE, *Agent.*

TO MAJOR T. T. PEARS, C. B., *Consulting Engineer.*

SIR,

20th February, 1854. I have the honor to forward copy of a letter from the Chief Engineer and to request Government will be pleased to sanction a further advance of Rupees 45,000 required for Construction and Contingencies including Workshops as hereunder specified—

District No. 1, Construction,	Rs. 15,000
" " 2, "	" 15,000
Contingencies,	" 15,000
Total	45,000

2. The Account of expenditure exhibited in Mr. Bruce's letter is correct as per Statements to the end of January. It may be proper for me to explain that on the same day that Mr. Bruce applied for the advance now required, Rs. 30,000 were paid to his credit, being the amount sanctioned by Government on the 16th Instant. The Chief Engineer has taken into consideration no doubt the probable time within which he will receive the advance now applied for.

I have, &c.,
(Signed) E. SMALLEY, *Agent.*

Submitted (with observations) for the sanction of Government.

MADRAS, 3d *March*, 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

TO THE CHIEF SECRETARY TO GOVERNMENT, *Fort St. George.*

MADRAS RAILWAY, *Madras, 20th February*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE, *Chief Engineer.*

TO EDWARD SMALLEY, ESQUIRE, *Agent.*

SIR,

I beg to hand you a Statement of expenditure on Districts 1 and 2 as well as

of that disbursed for Contingencies and Perambore Workshop, and request a further sanction for Rupees 15,000 in each case—in all Rupees 45,000.

1st District.

By Cash received,................................		83,750 0 0	
As per Form D, No. 9, for January,.........	69,539 15 11		
Advanced since,................................	14,259 5 4		
	83,799 5 3		
Deduct overpaid,................................	49 5 3		
		83,750 0 0	49 5 3

2d District.

By Cash received,................................		48,750 0 0	
As per Form D, No. 7, for January, ...	38,711 8 9		
Advanced since,................................	11,083 12 3		
	49,795 5 0		
Deduct overpaid,................................	1,045 5 0		1,045 5 0
		48,750 0 0	1,094 10 3

Contingencies and Perambore Workshop.

By Cash received,................................	24,250 0 0	
As per Form B, of all Districts,........	15,319 2 8	
Advanced to 1st and 2d do.	1,094 10 3	
Do. to 3, 7, 8, 14 and 15, do.	4,677 4 2	
Do. to Perambore Workshop, ...	1,146 5 2	
Do. for Contingencies paid Bills, &c.,..	1,409 3 8	
Balance in hand,................................	603 6 1	
		24,250 0 0

I have, &c ,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 53, dated 24th February, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent applies for a further advance of Rs. 45,000 required for the Engineer Department on the construction of Districts Nos. 1 and 2 and Contingent expenses including the Madras Workshops.

The Statement shows that in the end of January there was a sum of Rs. 25,000, in hand on the Construction Account alone. An advance of Rs. 30,000, has been since made and as the expenditure upon these two Districts may be taken at Rs. 25,000 a month, the money now in hand will be nearly exhausted by the end of the present month. I would recommend therefore that the advance of Rs. 45,000, be sanctioned.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
3d March, 1854.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 56.

Extract from the Minutes of Consultation, dated 10th March 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 3d March 1854.)

The Sub-Treasurer is authorized to make the further advance of Rs. (45,000) forty-five thousand required by the Agent of the Railway Company for the construction of Districts Nos. 1 and 2 and Contingent Expenses in the Engineer Department.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
1st March, 1854.

No. 61.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to forward copy of a letter from the Chief Engineer and in accordance therewith beg to request sanction for the disbursement of Rupees 30,000 on account of the following purposes.

26th February, 1854.

Construction, District No. 3,		15,000
Stations,	" " 1,	10,000
"	" " 2,	5,000
		Rs. 30,000

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
3*d April,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 25th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

We are making preliminary arrangements for commencing the work on District No. 3, such as Brick-making and other things.

I beg that application may be made for Rupees 15,000 on account of Construction, District 3.

It appears desirable to keep the accounts for stations separate from the other sanctioned estimates.

To do this I wish to have Rupees 10,000 for stations on District 1, and Rupees 5,000 for Stations on District 4.

I hope to submit the plans and estimates of the stations in the course of a few days.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
7th March 1854.

No. 88.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. With reference to your letter of the 26th ultimo, applying for Rupees 15,000 on account of Construction in District No. 3, and Rupees 15,000 on account of Stations in Districts 1 and 2; I have the honor to submit for your information copy of a letter from Major Pears.

2d March 1854, No. 28.

2. You will observe that that officer wishes the amount required for stations not to be drawn upon receipts but included in that required for a District, moreover, that the expenditure should be shown in Form D and the advances in Form G.

3. The estimates submitted to Government on account of the two Districts do not appear to have in them any provision for "Stations," and in your letter of June 29th 1853, it was explained that the expense of Stations was omitted. It is a question therefore whether the amount to be defrayed for Stations may be submitted in a supplemental estimate. I shall be glad to be favoured with your opinion on this point as also on the mode of exhibiting the expenditure of the buildings.

4. There is no Form H yet in use in my office in which the expenses of the buildings may be "embodied" as pointed out by Major Pears, but one may be prepared.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
29th March, 1854.

No. 99.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to your letter of the 2d instant, No. 28, regarding the modes of obtaining and adjusting advances for the Construction of Stations, I have the honor to transmit for your information copy if a letter addressed by one to the chief Engineer thereon. To this letter, I received no reply as yet and though a refresher has been sent, it is not likely that a reply will reach me till a week or more perhaps considering that Mr. Bruce is now on his way to the Hills.

2. You will find from my letter to Mr. Bruce that Stations were not included in the Estimates submitted to Government. As the form D professes to be an amount of such Estimates, it is a question how the expense of Stations could be entered in it now when not originally provided for. As you are however anxious that all expenditure on account of Construction should appear in that form, I beg that you will, should you approve of it, submit to government for sanction, the Estimates for stations this day transmitted separately as " Supplemental Estimates" to those for the Railway itself already sanctioned. As regards bringing the expenditure on this account ultimately in Form H, besides G, I have to state that no such Form is in use in the Agent's or Engineer's Department and that it is difficult to know what should be entered in it. Under these circumstances I shall be obliged by your sending me a Form for adoption.

3. Should the arrangement above proposed meet with your approval, I beg to request that the sum of Rupees 15,000 applied for, on the 1st instant, on account of Stations, may be sanctioned as for the construction of the line.

4. A copy of this letter will be sent to the Chief Engineer for his information.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 3d *April*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On letters from the Agent of the Madras Railway Company, No. 16 *and* 99, *dated* 1*st and* 29*th March*, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

So long as the expenditure is carefully recorded under the different heads as Earthwork, Permanent Way, Stations, &c. There appears no object in making advances separately in any of these, or for any one of these heads of expenditure more than the other. The necessity of the advances may be explained by a reference to the stations; but I think the advances should be sanctioned for the Construction Account upon the

Letter No. 61. several districts. I would recommend therefore that in compliance with the Agent's request, advances be sanctioned to the following extent.

Construction Account,	District No.	1,	Rs.	10,000
,,	,,	2,	,,	5,000
,,	,,	3,	,,	15,000
			Total Rs...	30000

MADRAS, 3d *April*, 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To the CHIEF SECRETARY to GOVERNMENT, *Fort St. George.*

FINANCIAL (RAILWAY) DEPARTMENT.

No. 76.

Extract from the Minutes of Consultation, dated 7th April, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 3d April 1854.)

The Sub-Treasurer is authorized to disburse the advance of Rupees (30,000) thirty thousand required by the Agent of the Railway Company on account of Construction in the following Districts:—

District No. 1,	10,000
,, ,, 2,	5,000
,, ,, 3,	15,000

(True Extract.)

(Signed) H. C. MONTGOMERY, *Chief Secretary.*

To MAJOR T. T. PEARS, C. B., *Consulting Engineer for Railways.*

MADRAS RAILWAY AGENCY OFFICE, *28th March,* 1854.

No. 95.

FROM EDWARD SMALLEY, ESQUIRE, *Agent.*

To MAJOR T. T. PEARS, C. B., *Consulting Engineer.*

SIR,

20th March 1854. I have the honor to forward copy of a letter from the Chief Engineer of the Railway and to request the sanction of Government for a further disbursement of Rupees 30,000 on account of Districts Nos. 1 and 2. The account of expenditure exhibited in the Chief Engineer's letter appears correct up to the Statements of February received by me.

I have, &c.,

(Signed) E. SMALLEY, *Agent.*

Submitted and recommended for the sanction of Government.

MADRAS, 10*th April,* 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To the CHIEF SECRETARY to GOVERNMENT, *Fort St. George.*

MADRAS RAILWAY,
Madras, 25th March, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you a Statement of expenditure on Districts 1 and 2 and have the honor to request a further sanction of Rs. (15,000) fifteen thousand in each case.

1st District.

By Cash received,	Rs.	1,13,750	0	0
As per Form D, No. 10, for February,	"	81,523	6	3
Advanced since,	"	21,585	5	6
Balance in hand,	"	10,641	4	3
	Rs..	1,13,750	0	0

2d District.

By Cash received,	Rs.	78,750	0	0
As per Form D, No. 8, for February,	"	52,632	10	10
Advanced since,	"	17,049	4	8
Balance in hand,	"	9,068	0	6
	Rs...	78,750	0	0

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

The former to be paid into the Bank of Madras, the latter in fifteen bills of 1,000 each at Trivellore.

(Signed GEORGE B. BRUCE,

(True Copy.)

(Signed) E. SMALLEY,
Agent.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 84.

Extract from the Minutes of Consultation, dated 12th April, 1854.

Read the following letter from the Agent of the Railway Company, submitted through the Consulting Engineer.

(Here enter 28th March, 1854.)

The Sub-Treasurer is authorized to disburse the advance of Rs. (30,000) thirty thousand required by the Agent of the Railway Company on account of Construction in Districts Nos. 1 and 2.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
13th April, 1854.

No. 113.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to forward copy of a letter from the Chief Engineer of the Railway applying for money to the extent of 32,000 Rupees.

2. Mr. Bruce states that he has established Workshops at Salem and Palghaut and that he requires a sum of Rupees 20,000 for Workshops generally. This as appears to me, is very much a professional matter, and therefore one in what I should interfere as little as possible. If Workshops are required at Salem and Palghaut it must be on a very small scale as no works have been begun in these Districts.

3. I certainly think that the expense of Workshops should appear in Form D, and not in Form B.

4. The Chief Engineer has applied for Rupees 3,000 in each of the Districts 7, 8, 13 and 14, making together Rupees 12,000 for Construction. This sum, Mr. Bruce explains, "is required for the building of Bungalows and other expenses chargeable to Form D." Referring to my letter dated 22d February, No. 50, Para. 4, I would beg to be informed whether "Bungalows" can be properly entered under the head of "Contingencies" of the several Estimates. The item of Bungalows should, I think, be separately shown in the Estimates, and the limit fixed by Government entered accordingly.

5. Mr. Bruce promises to forward a Statement of receipts and expenditure upon his joining his office, and as it is desirable that the works should not be delayed from want of funds, perhaps the Government will be pleased to sanction the advance of Rupees 30,000 now applied for.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
19th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Camp Trivellum, 7th April, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In order to carry on our works efficiently I have established a Workshop at Salem, and one at Palghaut to make such tools and implements as will be necessary.

The expense of these will of course ultimately be charged against the estimate of the respective Districts.

The expenditure of Perambore Workshops has hitherto been charged in the General Contingencies, Form B.

I beg to propose, as our shops are now more numerous: they should all be entered in one Form D, prepared for that purpose. It will not in any way confuse the other accounts and will be more strictly correct than charging their expense under the head of General Superintendence.

If this proposition be approved of, I will apply for money on account of Workshops which will be more satisfactory than swelling the Contingent Bill.

Accordingly I beg to apply for Rupees 20,000 on account of Workshops and Rupees 3,000 each for Construction Account of Districts 7, 8, 13 and 14. The latter sum of Rupees 12,000 is required for the building of Bungalows, and other expenses chargeable to Form D. Rupees 6,000 payable at Darampoory to Messrs. Beattie and Henderson in equal proportions, and Rupees 3,000 payable to Mr. Gale at Palghaut, and Rupees 3,000 to Mr. Ross at Coimbatore.

The sum for Workshops to be paid to me in the Madras Bank.

Should there be any objection to paying the money for "Workshops," please apply for the same sum for "Contingent Expenses," and as I am in camp without the necessary books for making out the usual statement of accounts rendered on applying for money, I hope Government will not delay their sanction, as we are in need of money and the statement shall be sent as soon as I join my office.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter (No. 113) from the Agent of the Madras Railway Company, dated 13th April 1854.

OBSERVATIONS BY CONSULTING ENGINEER.

1. The Chief Engineer of the Railway, applies for an advance of Rupees 32,000, of which 20,000 is required for the expenditure in "Workshops," of which there is already one at Madras, while it is intended to establish two others, one at Salem and another at Palghaut: 12,000 is required for expenditure on the Construction of line in Districts 7, 8, 13 and 14.

2. With regard to the mode of keeping the accounts of these "Workshops," I think it will be well now to adopt the plan proposed by Mr. Bruce, and make it a separate account. It is not of much importance where the expenditure is recorded, since a detailed account is kept, and the expense distributed periodically over the several portions of the line: but as the expenses will now increase and be for the future large, it will be well to place them, as proposed, in a separate account.

3. These Workshops, it must be explained, are intended for general purposes, the making up of stores and materials upon several districts. The expenditure upon them cannot be, with propriety, therefore thrown upon one district. There are made up, doors and windows, centrings, brick-moulds, trucks, wheel-barrows, &c. a separate account of the cost of each article is kept; and ultimately charged to the work, or portion of the work, on which it has been expended. The expenditure on the Madras Workshop has hitherto been entered under the Chief Engineer's establishment, but this may lead to a misunderstanding of the proper expenditure under that head: and I would recom-

mend therefore that "Workshops" be henceforward considered a separate head, as Mr. Bruce proposes and I would recommend that the advances now solicited be sanctioned.

Rupees 20,000 for "Workshops," Rupees 12,000 for Districts 7, 8, 13 and 14.

I have, &c.,

MADRAS, 19th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL RAILWAY DEPARTMENT,

No. 90.

Extract from the Minutes of Consultation, dated 21st April, 1854.

Read the following Letter from the Consulting Engineer for Railways.

(Here enter 19th April 1854, No. 113.)

The Right Honorable the Governor in Council sanctions the advance of Rupees (20,000) twenty thousand required on account of Workshops and Rupees (12,000) twelve thousand for the construction of the line in Districts Nos. 7, 8, 13 and 14 amounting together to Rupees (32,000) thirty-two thousand, and approves of the plan proposed by the Chief Railway Engineer and recommended by Major Pears of keeping a separate account of the expenditure on Workshops.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
11th May, 1854.

No. 142.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

From Chief Engineer, 24th April 1854.
To do. 2nd May, No. 176.
From do. 6th " "

I have the honor to forward copy of the correspondence, marginally noted, and request the sanction of Government for the disbursement of the sum of Rupees (40,000) forty thousand, applied for by Mr. Bruce on account of Construction in Districts 1 and 2. The account of expenditure given in Mr. Bruce's first letter appears correct, so far as the statements of the month of March: those for April have not reached me yet.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 19th May, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 24th April, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

With reference to my letter of the 7th Instant, I now beg to hand you a statement of Disbursements made on account of Workshops and Contingent Expenses; and in addition to the sum of 20,000 Rupees therein called for, I request you will have the goodness to obtain the sanction of Government for a further sum of Rupees 20,000 in each case on account of Districts 1 and 2, the statements connected with which are also appended.

District No. 1.

By Cash received				123,750	0	0
As per Form D, No. 11, for March,	96,047	3	9			
Advance since,	17,215	9	10			
Do. to Terminal Station,	2,000	0	0			
Balance in hand,	8,487	2	5			
				123,750	0	0

District No. 2.

By cash received,				83,750	0	0
As per Form D, No. 9, for March,	68,944	15	8			
Advanced since,	17,736	15	10			
	86,681	15	6			
Cash overpaid,	2,931	15	6			
				83,750	0	0

Contingencies, Workshops.

By cash received				45,250	0	0
As per Chief Engineers, Form B, to March 1854,	16,688	15	9			
As per Resident Engineers, Form B, to February,	2,009	12	7			
As per Form D, Perambore Workshop, for March,	4,701	14	8			
Advanced since,	4,587	1	9			
As per Form D, Palghaut Workshop,	297	9	5			
Advanced since,	302	6	7			
Advanced for Salem Workshop,	147	0	0			
Advanced to all Districts for various Contingencies,	16,816	8	9			
	45,551	5	6			
Cash overpaid,	301	5	6			
				45,250	0	0
Balance in hand of District No. 1,				8,487	2	5
Cash overpaid to District No. 2,	2,931	15	6			
Do. for Contingencies,	301	5	6			
				3,233	5	6
Balance Rs.				5,253	13	5

I have, &c.
(Signed) G. B. BRUCE,
Chief Engineer.

District 1, payable into Madras Bank.
District 2, two Accountant General's Bills at Trivellore.

(Signed) G. B. B.

MADRAS, *2nd May,* 1854.

No. 176.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

With reference to your letter, dated the 24th ultimo, I have the honor to re-

quest you will explain for what purpose the sum of Rupees 20,000 in each case on account of District 1 and 2 is required, that is, whether for Construction or Workshops. The sum of Rupees 20,000 first allowed to in your letter refers to "Workshops" which sum was applied for as for the whole line without reference to any particular District. In addition, therefore, (a phrase used in your letter) indicates that the further sum is also required for "Workshops." If so the allusion to any District was unnecessary, and I cannot therefore understand whether the money is wanted for "Workshops" for the whole line, or for Construction in Districts 1 and 2.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 6*th May* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In reply to your letter, dated 2d Instant, I beg to observe that as all applications for money on account of Districts are for Construction and nothing else, I did not state this in my letter, dated 24th April, as I might have done.

The reference to Workshops was made because I had previously applied for money under this head without forwarding the usual Statement.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 142, *dated the* 11*th May,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent makes application for a further advance of Rupees 40,000, for works of Construction in Districts 1 and 2, being 20,000 upon each District.

2. It seems that allowing for the ordinary monthly expenditure during April and May, the Accounts of which will be submitted hereafter, the balance in the hands of the Chief Engineer will be small by the end of this month. The advance now called for appears therefore to be necessary.

MADRAS, 19*th May,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 115.

Extract from the Minutes of Consultation, dated 23d May, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 19th May, 1854.)

Resolved that the Sub-Treasurer be authorized to advance to the Agent of the Railway Company, the further sum of (40,000) forty thousand Rupees required for works of Construction in Districts Nos. 1 and 2, being Rupees 20,000 for each District.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
5th July, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I am unable, away from my office, to give a Statement of the Accounts of District 3, but as I have now no Accountant General's Bills in hand for that District, I am afraid of running short of money.

I hope therefore that Government will overlook the irregularity of an application for funds being unaccompanied by the usual statement, and grant me Rupees 10,000 for the Construction Account of District 3. I will send the statement when I rejoin my office.

On procuring the money please to forward it to me in Accountant General's Bills of Rupees 1000 each, payable to me at Trivellum. Construction Account District 3, Rupees 10,000.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

Recommended for sanction.

(Signed) E. SMALLEY,
Agent.

6th July, 1854.

To THE CONSULTING ENGINEER FOR RAILWAYS.

Submitted and recommended for the sanction of Government.

MADRAS,
7th July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 155.

Extract from the Minutes of Consultation, dated 11th July, 1854.

Read the following letter from the Agent through the Consulting Engineer.

(Here enter 6th July, 1854.)

Resolved that the Sub-Treasurer be authorized to advance to the Agent of the Railway Company the further sum of (10,000) ten thousand Rupees required for Works of Construction in District No. 3.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
19th July, 1854.

No. 237.

To EDWARD SMALLEY, ESQUIRE,
Agent to the Madras Railway Company.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government,
Fort St. George.

SIR,

13th July 1854.

1. I have the honor to annex extract of a letter received by me from the Chief Engineer, and in accordance therewith to request that Government will be pleased to sanction a sum of Rupees twenty thousand for Construction in District 1, and a similar sum for Construction in District 2.

2. I also request that when sanction is passed the Sub-Treasurer may be instructed to disburse the two sums without the Consulting Engineer's countersignature upon my receipt.

3. A copy of this letter will be sent to the Consulting Engineer for his information.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Extract of a letter from the Chief Engineer, dated 13th July, 1854.

I have the honor to submit the following Statement of Disbursements on account of Construction in Districts Nos. 1 and 2, and request you will obtain the further sanction of Government for Rupees (20,000) twenty thousand in each case, making in all Rupees (40,000) forty thousand.

For Construction, District No. 1.

Cash received,..				1,58,750	0	0
As per Form D, for May 1854, Certificate No. 13,.....	1,16,334	4	9			
Advanced since,..	14,280	7	4			
As per Form D, for May 1854, Certificate No. 3, Madras T. Station,..	16,610	1	8			
Advanced since,..	6,000	0	0			
Balance in hand,..	6,525	2	3			
				1,58,750	0	0

District No. 2.

Cash received, ...		1,18,750 0 0
As per Form D, for May 1854, Certificate No. 11,....	92,347 8 10	
Advanced since,..	26,353 6 8	
Balance in hand,..	49 0 6	
		1,18,750 0 0

(True Extract.)

(Signed) E. SMALLEY,
Agent.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 165.

Extract from the Minutes of Consultation, dated 22d July, 1854.

Read the following letter from the Agent of the Railway Company.

(Here enter 19th July, 1854.)

Applying for Rupees 40,000 an account of Construction in Districts 1 and 2.

Resolved that the Sub-Treasurer be authorized to advance to the Agent of the Railway Company the further sum of Rupees (40,000) forty thousand, required for works of Construction in Districts 1 and 2, on his receipt, without the countersignature of the Consulting Engineer who is absent from the Presidency on duty.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
18*th August,* 1854.

No. 270.

FROM E. SMALLEY, ESQUIRE,
Agent to the Madras Railway Company.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government,
Fort St. George.

SIR,

12th August 1854.

I have the honor to forward copy of a letter from the Chief Engineer, and request that Government will be pleased to sanction Rupees (60,000) sixty thousand for the following purposes.

Construction, including Madras Terminal Station, District 1, Rs. 40,000.

Construction, District 3, Rs. 20,000.

2. I also request that the Sub-Treasurer may be authorized to disburse the amount without the Consulting Engineer's countersignature, upon my receipt.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 12*th August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to annex a Statement of expenditure on Account of Construction on Districts Nos. 1 and 3, and to request you will have the goodness to obtain the sanction of Government for further advances being made to me for this purpose.

FOR CONSTRUCTION.

District No. 1.

Cash received,..		1,78,750 0 0
As per Form D, for June 1854, Certificate No. 14..	1,26,986 12 9	
Advanced since, ...	24,827 8 7	
As per Form D, for June 1854, Certificate No. 4, M. Terminal Station,.	22,677 0 10	
Advanced since,...	4,233 8 1	
Balance in hand..............................	25 1 9	
		1,78,750 0 0

District No. 3.

Cash received, ...		25,000 0 0
As per Form D, for July 1854, Certificate No. 5......	10,312 14 9	
Advanced since,.............................	11,94[illegible] 3 3	
Balance in hand,................................	2,7[illegible]3 14 0	
		25,000 0 0

2. As the cost of expenditure on the Madras Terminal Station is included, I request that the sum of Rupees 40,000 may be obtained for District No. 1, and Rupees 20,000 for District No. 3; the former amount to be paid to my credit in the Bank, and the latter sum to be procured in Accountant General's Bills for Rupees 1,000 each, payable at Trivellum to myself.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

No. 184.

FINANCIAL (RAILWAY) DEPARTMENT.

Extract from the Minutes of Consultation, dated 22d August, 1854.

Read the following letter from the Agent to the Madras Railway Company.

(Here enter 18th August, 1854.)

Resolved that the Sub-Treasurer be authorized to advance to the Agent of the Railway Company the further sum of Rupees (60,000) sixty thousand, required for works of Construction in Districts 1 and 3, on his receipt, without the countersignature of the Consulting Engineer, who is absent from the Presidency on duty.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
29th *August*, 1854.

No. 286.

FROM EDWARD SMALLEY, ESQUIRE,
Agent Madras Railway Company.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government,
Fort St. George.

SIR,

23d August, 1854. 1. I have the honor to annex copy of a letter from the Chief Engineer and request that Government will be pleased to sanction Rupees 20,000 on account of Construction in District 2.

2. I also request that the Sub-Treasurer may be authorized to disburse the amount without the Consulting Engineer's countersignature upon my receipt.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
23*d August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to submit the following Statement of Disbursement on account of Construction in District No. 2, and request you will obtain the further sanction of Government for Rupees (20,000) twenty thousand more.

By cash received,				1,38,750	0	0
As per Form D, Certificate No. 13, to 31st July 1854,	1,14,450	8	10			
Advanced since,	21,250	6	8			
Balance in hand,	3,049	0	6			
				1,38,750	0	0

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 191.

Extract from the Minutes of Consultation, dated 5th September, 1854.

Read the following letter from the Agent to the Madras Railway Company.

(Here enter 29th August, 1854.)

Applying for Rupees 20,000 on account of Construction in District 2.

Resolved that the Sub-Treasurer be authorized to advance to the Agent of the

Railway Company the sum of Rupees (20,000) twenty thousand required for works of Construction in District 2, on his receipt without the countersignature of the Consulting Engineer, who is absent from the Presidency on duty.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
1st September, 1854.

No. 290.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government,
Fort St. George.

SIR,

28th August, 1854.

1. I have the honor to forward copy of a letter from the Chief Engineer and request that Government will be pleased to sanction a further sum of Rs. (5,000) five thousand in each case on account of Construction in Districts 7 and 8.

2. I also request that the Sub-Treasurer may be authorized to disburse the amount without the Consulting Engineer's countersignature upon my receipt.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 28th August, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

With reference to the subjoined statement I have the honor to request you will have the goodness to obtain the sanction of Government for a further sum of Rs. (5,000) five thousand in each case, on Account of Construction for Districts 7 and 8.

2. The amount, viz., Rs. ten thousand, I request may be forwarded to me in Accountant General's Bills of Rs. one thousand each, five thousand to be made payable to me at Ootungherry and five thousand at Darampoory.

District 7.

By Cash received..		3,000 0 0
As per Form D, for July 1854, Certificate No. 3,....	682 15 11	
Advanced since,..	2,407 0 1	
	3,090 0 0	
Cash overpaid..	90 0 0	
		3,000 0 0

District 8.

By Cash received				3,000	0	0
As per Form D, for July 1854, Certificate No. 3	1,505	7	9			
Advanced since	1,537	0	3			
	3,042	8	0			
Cash overpaid	42	8	0			
				3,000	0	0

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 195.

Extract from the Minutes of Consultation, dated 5th September 1854.

Read the following letter from the Agent to the Madras Railway Company.

Submitting an application from the Chief Engineer for Rupees 10,000 on account of Districts 7 and 8.

(Here enter 1st September 1854.)

Resolved, that the Sub-Treasurer be authorized to advance to the Agent of the Railway Company the sum of Rupees (10,000) ten thousand required for works of Construction in Districts 7 and 8, on his receipt without the countersignature of the Consulting Engineer who is absent from the Presidency on duty.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
27th September, 1854.

No. 313.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to annex copy of a letter from the Chief Engineer, dated the 23d instant, and in accordance therewith beg to request the sanction of Government for a further advance of Rupees (105,000) one hundred and five thousand on account of the following purposes :—

Construction, District 1, ... Rs. 40,000

Construction, District 2,	Rs. 20,000
" " 3,	" 20,000
" " 4,	" 5,000
Total Rs...	105,000

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted and recommended for the sanction of Government.

CAMP PALMANAIR,
2d October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 23*d September,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to annex Statements of the Expenditure on account of Construction on Districts 1, 2, 3 and 14 and also on Workshops, and request you will obtain the sanction of Government for further advances being made as follows:—

District No. 1,	Rs. 40,000
" 2,	" 20,000
" 3,	" 20,000
" 14,	" 5,000
Workshops,	" 20,000

Of these sums I request that the amounts for District 1, and for Workshops may be paid into the Bank of Madras, but that Accountant General's Bill for Rupees 1,000 each may be sent to me for Districts 2, 3 and 14 payable at Trivellore, Trivellum and Palghaut respectively.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

District No. 1.

Cash received,				2,18,750	0	0
As per Form D, for August 1854, Certificate No. 16.	1,41,725	8	0			
Advanced since,	26,229	4	8			
	1,67,954	12	8			
Madras Terminal Station, as per Form D, for August 1854, Certificate No. 6,	35,109	0	9			
Advanced since,	4,324	6	2			
Balance in hand,	11,361	12	5			
				2,18,750	0	0

District No. 2.

Cash received,..........................				158,750	0	0
As per Form D, for August 1854, Certificate No. 14.	129,789	6	6			
Advanced since, ...	31,088	5	9			
	160,877	12	3			
Amount overpaid,.................................	2,127	12	3			
				158,750	0	0

District No. 3.

Cash received,....				45,000	0	0
As per Form D, for August 1854, Certificate No. 6....	21,069	15	10			
Advanced since,..................................	18,702	13	2			
Balance in hand, ...	5,257	3	0			
				45,000	0	0

District No. 14.

Cash received,..				3,000	0	0
As per Form D, for August 1854, Certificate No. 3...	511	5	10			
Advanced since,.................................	1,646	10	2			
Balance in hand,..............................	842	0	0			
				3,000	0	0

Workshops.

By Cash received................				60,000	0	0
As per Form D, for August 1854, Certificate No. 6..	48,360	10	4			
Advanced since,...................................	9,890	9	9			
Balance,..	1,748	11	11			
				60,000	0	0

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

FINANCIAL (RAILWAY) DEPARTMENT.



No. 220.

Extract from the Minutes of Consultation, dated 10th October, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 27th September, 1854, No. 313.)

Resolved, that the Sub-Treasurer be authorized to advance to the Agent of the Railway Company the sum of Rupees (1,05,000) one lac and five thousand required for the following purposes:—

	Rs.
District No. 1,..	40,000
" " 2,..	20,000
" " 3,..	20,000
" " 14,..	5,000
Workshops, ...	20,000

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
25th October, 1854.

No. 339.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

20th October. 1. I have the honor to forward copy of a letter from the Chief Engineer and beg to request the sanction of Government for the following sums:—

	Rs.
District 1,	40,000
" 2,	20,000
" 3,	20,000
" 8,	10,000
Workshops,	20,000
Total one lac and ten thousand...	1,10,000

2. A portion of the sum sanctioned by Government under date the 10th Instant, for Districts 1, 2, 3 and 14, and Workshops was paid into the Bank of Madras to Mr. Bruce's credit on the 19th Instant, and the remainder was yesterday remitted to him by Accountant General's Bills.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
20th November, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 20th October, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you statements of money expended for Districts 1, 2, 3 and 8, also Workshops.

2. I am very much in want of the money applied for on the 23d September, 1854, and beg in anticipation of a similar delay to apply for further sums as follows:—

District No.	1,	40,000	Bank of Madras.
Do.	2,	20,000	Accountant General's Bills of Rupees 1,000 each, payable at Trivellore.
Do.	3,	20,000	Accountant General's Bills of Rupees 1,000 each, payable at Trivellum.
Do.	8,	10,000	Accountant General's Bills of Rupees 500 each, payable at Deerampoory.
Workshops,		20,000	Bank of Madras.

District No. 1.

Cash received,				218,750	0	0
As per Form D, for September 1854, including Terminal Station, Certificate No. 17	192,205	12	4			
Advanced since,	18,182	7	3			
Balance in hand,	8,361	12	5			
				218,750	0	0

District No. 2.

Cash received,				158,750	0	0
As per Form D, for September 1854, Certificate No. 15,	1,40,084	11	11			
Advanced since,	20,973	0	4			
Amount overpaid,	2,127	12	3			
				158,750	0	0

District No. 3.

Cash received,				45,000	0	0
As per Form D, for September 1854, Certificate No. 7,	31,151	10	4			
Advanced since,	13,621	2	8			
Balance in hand,	227	3	0			
				45,000	0	0

District No. 8.

By Cash received,				8,000	0	0
As per Form D, for September 1854, Certificate No. 5,	3.629	2	1			
Advanced since,	3,413	5	11			
Balance in hand,	957	8	0			
				8,000	0	0

Workshops.

Cash received,				60,000	0	0
As per Form D, for September 1854, Certificate No. 7,	62,115	1	8			
Advanced since,	3,823	9	5			
Amount overpaid,	5,938	11	1			
				60,000	0	0

I have, &c.,

(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 249.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Before submitting to Government your letter No. 339 of the 25th ultimo, forwarding copy of a letter from Mr. Bruce applying for a further advance of Rs. 1,10,000, I have the honor to request your attention to the state of the accounts; and to request you will state for the information of Government when the accounts of expenditure due for July, August, and September will be ready for submission.

I have to request your attention also to the circumstance of a sum of nearly 70,000 Rupees having been expended on Workshops and no account yet rendered of the results of this expenditure; of stores made up, or other work done.

Your Chief Engineer has made early application for this money in anticipation of delay in receiving sanction. I am apprehensive lest the non-submission of accounts should prove the most fertile source of delay. According to the latest account submitted, you would appear to have a balance unadjusted of about 3½ lacs of Rupees, your ordinary expenditure in the Engineer Department hitherto having been about Rs. 50,000 per mensem, exclusive of authorized Establishments.

June.

I have the honor to be, &c.,

MADRAS,
3d *November*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

(True Copy.)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
16*th November*, 1854.

No. 367.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to your letter No. 249, of the 3d Instant, I have the honor to transmit for your information copy of a letter from the Chief Engineer, dated the 13th Instant.

2. So soon as the Accounts, Form D, for July, August and September are returned with the necessary items of Stores entered therein, they shall be forwarded to you.

3. The account of Stores required by you have been subsequently received with a letter from Mr. Bruce, dated 14th Instant, and they shall be examined and forwarded to you as soon as practicable.

4. Referring to Para. 4 of Mr. Bruce's letter, I beg to observe that though no writer was expressly sanctioned for the Store Accounts yet one (his Goomastah) was appointed to them: as you will find by a reference to Mr. Bruce's letter of the 28th February last, Para. 11. In that letter Mr. Bruce states as follows:—"To enable him (the Storekeeper) to do all this and prepare for Government regularly the return of Stores required by them I propose to have my Goomastah in Madras, changing his designation to that of Store Writer; for which I also solicit sanction." Mr. Bruce's attention will be drawn to this fact.

5. With this explanation perhaps you will no longer demur to obtain the sanction of Government for the advances required. I fully enter into your views as to the necessity of stopping supplies of money, after so many unsuccessful applications for correct and complete Accounts.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
20*th November*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Madras, 13th November, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

In reply to your letter, No. 431, I beg to observe that all the Accounts for July, August and September have been long since forwarded to you. These were returned by you to have the statement of Stores added, which in point of fact has nothing whatever to do with the Account of Expenditure.

I regret that any thing has to be appended to a simple statement of expenditure, an omission or mistake in which may at any time prevent the passing of the Accounts themselves: for which alone sanction is sought, when such a delay must inevitably stop our works altogether, as it threatens to do in the present instance.

I immediately, on receiving back the Accounts I applied for the information necessary; the whole of which has not yet been received. There shall be no avoidable delay.

Regarding the Store Account mentioned in your letter, No. 428, no extra Writer was, I think, ever sanctioned for that purpose; and further a regular Monthly Account of all articles purchased has been rendered monthly with the Shop Accounts to you.

The Shop Accounts are ready and are only retained until the copying can be finished.

As I before observed the Statement of the half-yearly returns was delayed in consequence of the Superintendence of the Shop having been changed at the time of its preparation.

I have, &c.,
(Signed GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter (No. 339) from the Agent of the Madras Railway Company, dated the 25th October, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

On receiving an application for a further advance of Rupees 1,10,000 towards the Construction of the Railway, I considered it my duty to make enquiries regarding the delay in submission of Accounts connected with the unadjusted balance upon previous advances. The correspondence with the Agent is submitted herewith for the information of Government.

To the Agent, No. 249, dated 3d November 1854.
From the Agent, No. 367, dated 16th Nov. 1854.

I have reason to hope the irregularity in the preparation of the Accounts of which I had to complain, will be remedied; and I would recommend that the advance of Rupees (1,10,000) one lac and ten thousand, now applied for, may be sanctioned.

MADRAS,
20th November, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George,

FINANCIAL (RAILWAY) DEPARTMENT.

No. 250.

Extract from the Minutes of Consultation, dated 29th November, 1851.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 20th November, 1854.)

The Right Honorable the Governor in Council authorizes the Sub-Treasurer to advance to the Agent of the Railway Company the sum of Rupees (1,10,000) one lac and ten thousand, towards the Construction of the Railway and Workshops and approves of the Consulting Engineer having called the attention of the Agent to the state of the accounts connected with the unadjusted balance of previous advances.

District 1,........	40,000
" 2,...	20,000
" 3,........	20,000
" 8,........	10,000
Workshops,.........	20,000
Rs...	1,10,000

2. The Chief Railway Engineer notices the inconveniences of delay of sanction caused by the return of his Accounts for correction. The obvious remedy is a more careful preparation of the Accounts, by which errors will be avoided: and this is more likely to follow an early preparation of them, than delaying them to the latest moment and then hurrying them up to the Consulting Engineer and urging for early sanction.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
30*th November*, 1853.

No. 213.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to submit the Plans and Estimates of District No. 2.

Section No. 1, ...	Rs.	1,78,695	0	0
" " 2, ...	"	1,28,003	0	0
Total...		3,06,698	0	0

2. Mr. Bruce having in the accompanying copy of a letter (21st November, 1853.) afforded such explanation as seems necessary, it only remains for me to submit the Estimates to the Government and to request that they will be pleased to sanction them, amounting in the aggregate to Rupees 3,06,698-0-0.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
16*th February*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 21st November, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I have now the honor to forward to you the Plans and Sections of District No. 2, with Drawings, No. 10 and 11 of Bridges on this District, differing from any which have previously submitted to Government.

2. The Estimates also accompany these Drawings, to one or two points in which I beg to draw your attention.

3. *Masonry.*—As there is considerable difficulty in getting fuel to burn bricks and greater difficulty still in procuring suitable clay on District No. 2, we shall in most cases require to use stone; and as the expense in preparing and setting this is a little more than bricks generally are, I have estimated the work at Rupees 4, per cubic yard.

5. *Earthwork.*—This I have estimated for a single line believing it to be the wish of Government.

6. The price remains as in Section 2, District 1: for the whole of that end of the line is hard ground and cannot be excavated so cheaply as the soil near Madras.

7. *Permanent Way.*—The differences in the Estimate under this head arise from the difference in the carriage of material; on Section 2, the Sleepers will probably be delivered by the Contractor from the West, but the rails will have to be led from Madras: on Section 1, both will probably be led from Madras.

8. *Miscellaneous.*—I have also thought it desirable to provide for Medical attendance, and for extra Bungalows, which are necessary in some parts of the line for special purposes.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copy.)

(Signed) GEORGE B. BRUCE,
Chief Engineer.

On a letter (No. 213) from the Agent of the Madras Railway Company, dated the 30th November 1853.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent submits with an explanatory letter from the Chief Engineer of the Railway, Plans and Estimates of the cost of construction of the 2d District of the Railway, extending from the 25th mile (measured from the Beach at Madras) to the 47th mile, a short distance on this side of Menil—21 miles and 70 chains.

2. This Estimate provides, as before, for the construction of the line, ballasting and laying Permanent Way, gates and fencing, metalling, level crossings, and similar works of a miscellaneous character, but does not include stations, rolling stock, or the materials of the Permanent Way.

3. The Estimate now submitted extends over 21⅞ miles and amounts to Rs. 306,698, being at the rate of Rs. 14,020 per mile, and being Rs. 2,815 per mile more than the estimated cost of construction upon the 1st District. This difference is explained by Mr. Bruce, and arises from various causes. The Cortilliaur Bridge, estimated at Rs. 48,226, tends to swell the cost on this District.

4. Mr. Bruce purposes to apply stone to the works of Masonry instead of brick, in consequence of good brick earth being generally wanting and the stone, upon some portions of the District, ready at hand though slightly more expensive than brick.

5. The soil is a dry hard loam, in many places, and a little rock will, I fear, be met with on the high ground beyond the Cortilliaur. The rate allowed in the Estimate, viz., 1 Anna and 1 Pic per yard is, I think, very moderate.

6. The Estimate now submitted for the 2d District is for a single line. The amount of Earthwork in cuttings and embankments is (Section 1, 358,096; Section 2, 4,18,930) cubic yards 7,77,026, being at the rate of 35,521 yards per mile.

7. The average height, or depth, in Earthwork will be something less than six feet. The following are the planes upon this District commencing at the termination of the 1st District near the village of Petloor.

No. of Planes.	*Length.* *Miles.*	*Inches.*	*Rate of inclinations.*
No. 1,	0	78½	1 in 1756, ascending.
„ 2,	2	1½	1 in 755·4 do.
„ 3,	2	40	Level.
„ 4,	2	0	1 in 528—ascending.
„ 5,	2	33	Level.
„ 6,	1	7	1 in 812—ascending.
„ 7,	1	33	1 in 812·4 do.
„ 8,	1	0	1 in 352 do.
„ 9,	2	40	1 in 264 do.
„ 10,	4	40	1 in 352 do.
„ 11,	1	37	1 in 754 do.

8. There are seven curves to Radii of 7, 3, 4, 3½, 7, 7, 3½ miles respectively.

9. Mr. Bruce has introduced an allowance for Medical attendance which should not, as a matter of form, be entered into the estimates any more than his own pay or that of the other Engineers are.

10. The Estimates, as now submitted, are useful as showing the probable cost of the work, as it might stand a Contractor, irrespective of the superintendence on the part of the Railway Company. For the latter purpose special sanction is given from time to time by Government. Medical allowance has been also, in a similar manner, sanctioned. It should therefore be struck out of the Estimate.

11. It will be observed that under ordinary circumstances the larger openings allowed by Mr. Bruce in his embankments are arches of nine feet. These are generally intended to give passage to water in seasons of rain; and at all other times to serve as highways for carts, &c. The nine feet appeared to me too narrow; and I have already, by letter to the Agent, requested that in all cases, where the height of embankment admits of it, these openings may be made 12 feet. The increase in expense arising from the change will be very small.

12. In the Estimate for Section 1, of District No. 2 will be observed a 30 feet arch at 30 miles, 17 chains. I have requested the Agent to cause double this waterway to be given. It gives passage to flood waters from the Cortilliaur, and I considered the addition necessary.

13. There is a sum in each section of Rupees 300 for Bungalows in addition to

those sanctioned already for each District on a cost of Rupees 750. These are required for Sub-Inspectors and persons of that class and though they might have been provided for perhaps out of the "Contingencies," there is no objection to a specific sum being thus named for them.

14. The Estimates are upon the whole moderate : and the character of the line as regards curves and gradients very favorable. The Earthworks are for a single way, those of Masonry for a double line. I would recommend that they be sanctioned (a deduction being made of the cost of Medical attendance) to the amount of

Rupees,..	1,78,345	for Section No. 1.
Rupees,..	1,27,653	for Section No. 2.
Total Rs...	3,05,998	

15. The submission of these Estimates has been delayed longer than it should have been, in ordinary course of business, in consequence of my absence from Madras on duty

MADRAS, 17th February, 1851.

(Signed) T. T. PEARS,
Consulting Engineer for Railways

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT

No. 48.

Extract from the Minutes of Consultation, under date 24th February, 1854.

Read the following letter from the Agent of the Railway Company submitted with the observations of the Consulting Engineer.

Dated 17th February, 1854.

1 The Estimates submitted with the foregoing papers provide for the construction of the lines, ballasting and laying the Permanent Way, and for works of a miscellaneous character for the whole extent of the 2d District being 21⅜ miles, and amount to Rupees 3,06,698, including 700 Rupees for Medical attendance, the cost per mile being Rupees 14,020, or Rupees 2,815 more than the estimated outlay upon the 1st District.

Section No. 1 Rs. 1,78,695
" 2 ,, 1,28,003
Total Rs. 3,06,698

2. The Estimates appear to have been very carefully prepared, and to be on the whole moderate; and the average excess per mile over the previous Estimate is sufficiently explained by the cost of the Cortilliaur Bridge being included in it, and by the substitution of stone for brick, in some instances, which seems judicious; and also by the difference in the soil.

3. Excluding the allowance for Medical attendance, which the Government agree with the Consulting Engineer should not have been entered in the Estimates, but should be separately disposed of, the Right Honorable the Governor in Council sanctions the rest of the items amounting to Rupees (3,05,998) three lacs and five thousand nine hundred and ninety-eight.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
6th March, 1854.

No. 66.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to forward the accompanying copy of a letter from the Chief Engineer of the Railway, requesting sanction for an outlay of Rs. 3,292-14-2, for adding to the height of the Bridge over the Cortilliaur river, which amount I beg to recommend for sanction if the proposed measure meets with your approval. The original Estimate for the Bridge as sanctioned was Rs. 52,226.

28th February, 1854.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 4th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Madras, 28th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

When down at the Cortilliaur three days ago I gave orders to have the Bridge built 2 feet 6 inches, higher than shown on the plan.

It appeared to me desirable to do this, to ensure great security in the event of extraordinary floods.

I beg to submit for sanction an Estimate of the cost entailed by this alteration.

I propose to raise the Bridge from the East for half a mile, for a gradient of 15 feet per mile, and fall to the West from the Bridge with a gradient of 5 feet per mile, also for half a mile.

The cost will be as follows :—

Earthwork in Embankment	13,778 cubic yards	at 0/1/1..........	Rs.	932	14	2
Masonry,	472 „	at 5/...	„	2,360	0	0
			Company's Rs..	3,292	14	2

Being a total on the Bridge itself of Rupees 2,360.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 66, dated 6th March 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

Earthwork,	Rs.	932	14	2
Masonry,	,,	2,360	0	0
Total	Rs.	3,292	14	2

1. The Chief Engineer of the Railway having lately visited the work at the Cortilliaur Bridge proposes to give additional security to the work by raising the Piers 2 feet 6 inches higher than was originally intended, at a cost of Rupees 3,292-14-2. This would bring the highest freshes to about the springs of the arches, and would of course give somewhat more of waterway. Another advantage in this change will be that the centerings which they propose to use in the construction of the arches will be raised above the influence of ordinary high freshes. I would recommend that the Agent be permitted to authorize this alteration in the original plan.

Including the additional arch formerly proposed, vide report, dated 30th November 1853.

2. The Estimate for this Bridge, as sanctioned in Minutes of Consultation, No. 174, dated 5th December 1855, amounted to Rupees 52,226. By the proposed alteration this amount will be raised to Rupees 55,518-14-2, including the necessary addition to the adjacent banks, besides the cost of the retaining wall alluded to in my report, dated 28th December 1853, No. 49, and which I have requested the Agent to have carried out.

MADRAS,
4th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 80.

Extract from the Minutes of Consultation, dated 10th April, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter dated April 4th, 1854.)

The Right Honorable the Governor in Council sanctions the alteration recommended by the Consulting Engineer in the original plan of the Cortilliaur Bridge and the further outlay required for that purpose, amounting to Rs. (3,292-14-2) three thousand two hundred and ninety-two, Annas fourteen and Pice two.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

PROGRESS REPORT.—FORM E.

Remarks.

During the first two weeks of the month of November little or nothing could be done in consequence of the rain.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

CAMP OOTACAMUND,
19th December, 1853.

(Signed) E. SMALLEY,
Agent.

R. ALLON,
Chief Clerk.

Remarks.

The Earthwork done on the District has been very satisfactory; it is a little short of 150,000 Cubic yards. I hope soon to begin the ballasting. The only Masonry of any consequence which remains to be done is the Canal Bridge which is progressing favourably, though not so quickly as I could wish.

We have been able to do nothing towards levelling the station ground from not having got possession.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

21*st January,* 1854.

(Signed) E. SMALLEY,
Agent.

R. ALLON,
Chief Clerk.

Remarks.

During the two first weeks of November the works were considerably delayed by the rains.

From what I have seen of these works during my present march, I anticipate a greatly increased amount of progress in future.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

CAMP OOTACAMUND,
19*th December,* 1853.

(Signed) E. SMALLEY,
Agent.

R. ALLON,
Chief Clerk.

Remarks.

It will be observed that the amount of Earthwork done on this District during the month of December 1853 was very nearly 100,000 Cubic yards, this which is a considerable increase over any preceding month will, I have no doubt, be greatly exceeded in future. In some cases owing to the very hard nature of the material, the expense is higher than any previous excavation.

Considerable difficulty has been experienced in founding one of the Piers of the Cortilliaur Bridge. Chatties and bricks were found at a depth of 20 feet below the bed of the River; and bearing marks of having been at one time artificially excavated, it was necessary to sink the foundation much beyond the usual depth.

Seven Piers and one Abutment are built.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

21*st January,* 1854.

(Signed) E. SMALLEY,
Agent.

R. ALLON,
Chief Clerk.

On Progress Report (Form E) for November and December 1853, submitted by the Agent of the Madras Railway Company.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The progress made during these two months and especially during the latter appear satis-

factory. The total amount of Earthwork executed during November was Cubic yards 140,434¼, and during December it amounted to Cubic yards 2,58,602¼.

The works of Masonry in District No. 1, are nearly completed and the rate of work on District No. 2, appears, as in the case of Earthwork, steadily on the increase.

MADRAS,
23d *February*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Remarks.

1. We have been able to do nothing at the station here from not having possession.
2. In Permanent Way we have been able to do nothing from not having materials.
3. In works where we are not fettered, I consider the report favourable.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS,
20th *February*, 1854.

(Signed) E. SMALLEY,
Agent.

Remarks.

In forwarding this Statement of Progress I beg to remark that our works have been a good deal interfered with by native feasts: it has notwithstanding progressed most satisfactorily.

About sixteen Piers of the Cortilliaur were founded before the end of January.

(Signed) GEORGE. B. BRUCE,
Chief Engineer.

MADRAS,
17th *February*, 1854.

(Signed) E. SMALLEY,
Agent.

On Report of Progress (E) in the Madras Railway, during the month of January, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The amount of Earthwork executed on District 1 and 2 during January was cubic yards 2,44,038½ which is very fair progress.

The Masonry work in District No. 2 has advanced well, also 2,220¾ yards having been executed. On District No. 1, the progress in this branch of the work is unsatisfactory, 336¾ yards only having been executed, Mr. Bruce seems to have overlooked this in pronouncing the Report for the first District favorable.

The station ground at Madras is in process of clearing and the work commencing, chairs from Porto Novo are daily expected.

MADRAS,
9th *March*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Remarks.

There is here a falling off in the Earthwork which is to be attributed to the same causes as in District No. 2.

I hope however that the present month will shew a more favorable result.

(Signed) GEORGE B. BRUCE,
Chief Engineer.
(Signed) E. SMALLEY,
Agent.

Remarks.

There is a considerable falling off in the Earthwork done this month chiefly owing to the anxiety of Contractors to delay in hope of rain coming to soften the ground which is very hard. It is in part owing to the shortness of the month.

All the foundations of the Cortilliaur Bridge have been put in.

(Signed) GEORGE B. BRUCE,
21st March, 1854. *Chief Engineer.*
(Signed) E. SMALLEY,
Agent.

On Report of Progress Form E, dated 21st of March, submitted by the Agent.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The progress during the month of February upon District 1 and 2 of the Railway is not quite satisfactory.

2. The Earthwork on District No. 2, and the Brickwork, in District 1, are alike unsatisfactory, the former amounts to 75,889 the latter to 455 cubic yards.

3. I think more work should have been done, and that it would be expedient in the event of any difficulty arising from the peculiarity of the season such as are mentioned in Mr. Bruce's explanatory Memo. that the rate of payment should be adjusted to the exigency of the case, rather than that delay should be thus incurred in the completion of the work.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
18*th April,* 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 98.

Extract from the Minutes of Consultation, dated 27th April, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 18th April, 1854.)

The progress does not appear satisfactory either in Earth or Brickwork, and the Government desire that a communication to the effect of the Consulting Engineer's remarks be made to the Agent and Chief Railway Engineer.

(True Extract.)

(Signed) T. PYCROFT,
Secretary to Government.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

On Report of Progress (Form E) forwarded by the Agent of the Madras Railway Company, and dated the 3d May, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The report is submitted in an Abstract form showing the progress upon each District; but not as heretofore upon each mile. The increasing extent of work appeared to render this advisable.

Upon District No. 1, the progress in Earthwork during March is fair: that in "Masonry" very unsatisfactory. The season has been particularly favorable to this part of the work; and the small amount of Brickwork completed during the three first months of the present year upon this District would seem to indicate some serious defect in the local arrangements for the conduct of the work. On District No. 2, the progress in Earthwork during March was again unsatisfactory, viz., 97,852 yards, six hundred men and as many women, employed constantly during the month would have executed thus much. With proper arrangements they should get much more labour than this. On District No. 3, the work was commenced in March, and a few yards only, as the report shows, executed during that month.

MADRAS, 20*th May,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 118.

Extract from the Minutes of Consultation, dated 26th May, 1854.

Read the following report from the Consulting Engineer for Railways.

(Here enter 20th May, 1854.)

The Right Honorable the Governor in Council regrets to observe that the progress of the Railway operations during the month of March in Nos. 1 and 2 Divisions is so unsatisfactory. The remarks of the Consulting Engineer will be communicated to the Agent, in order that he may adopt measures, for the better carrying on of the works, and if reports for subsequent months do not exhibit improvement, His Lordship in Council would wish Major Pears himself to visit those parts of the line to which his unfavorable remarks specially apply, with a view of ascertaining and reporting exactly where the present arrangements are defective.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
13*th June,* 1854.

No. 192.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

Min. of Cons. 26th May 1854, No. 118.

With reference to the remarks of Government on the slow progress of the works in Districts 1 and 2 during the month of March

5th June, 1854. last, I have the honor to submit copy of a letter from the Chief Engineer of the Railway, and to state my hope that the explanation therein afforded will be deemed satisfactory.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

MADRAS, 16*th June*, 1854.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE.
Shervaroy Hills, 5th June, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to acknowledge the receipt of your letter No. 228, enclosing Minutes of Consultation, dated 26th May 1854, and the remarks of Major Pears regarding the progress of the works during March last.

2. The explanation to which you refer, I received from the Engineers amounted simply to this that the ground is so hard, that the people hold back and will not work until there is a fall of rain.

2. *District* 1.—The quantities in Brickwork done on this District are almost unavoidably less than they once were, because the whole of the first section is finished with the exception of one Bridge, and as the bricks had nearly all to be made after the end of the rains, that is the beginning of the year, the Brickwork could only be commenced on Section 2, after the Bricks were made.

4. The Earthwork upon Section 1, is also completed with the exception of a little near Madras and part of one cutting.

5. *District* 2.—I do not agree with Major Pears in thinking that the Earthwork done during March 97,852 cubic yards was unsatisfactory, and on the greater part of District 2, during that month the Earthwork was conducted with considerable spirit, 1,200 people may turn over that amount of the alluvial soil near Madras when it is wet; the case is very different when we are cutting materials second only to rock and indeed mixed with it.

6. The whole case is simply this, that so long as "the heavens are as brass and earth iron" it is impossible to get a large amount of Earthwork done without incurring too extravagant expenditure, and I would respectfully ask the Governor in Council what should we gain by it. It would not forward the opening of the line a single hour.

7. I have not chairs to reach from Royapooram to the Canal Bridge and should I be justified in defying the seasons and doubling the cost without gaining one particle

of advantage, I should perhaps gain credit for speed of execution but it would be by sacrificing the interests of the Company which I have the honor to serve.

8. I am willing to do anything to forward the work, but when I know that so soon as our embankments and Bridges are completed we have no materials from England to lay the rails, it is, I think, wisest not to incur extravagant expenses, but rather to choose the most favorable seasons for work so long as we keep far ahead of the supplies from Home which we are doing and always will do.

9. In the foregoing I have adverted the main reason of the work not progressing and the grounds upon which I conceived it to be unwise to force matters at present, but I may add that I have already given orders to employ daily labourers or make any moderate allowance in the price which may in some measure have the effect of keeping the people together and of gathering them so as to be ready to take advantage of the rain when it comes.

10. I am in the habit of receiving weekly approximate reports from the Engineers, but the dread of increasing the already burdensome amount of Official correspondence has hitherto prevented me from sending these to you, and I really think that so far as Government are concerned monthly reports are sufficient. I can however forward to you a Statement prior to the leaving of each Steamer for England.

I have the honor, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

On a letter (No. 192) from the Agent of the Madras Railway Company, dated 13th June, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards a letter from the Chief Engineer, explanation of the Comparatively small amount of work done upon Districts 1 and 2 during the month of March.

2. In Para. 3, the Chief Engineer explains the shortness of Brickwork in District 1, as owing to the Bricks not being ready. The making of these is a very important part of the work, the progress of which has been called in question.

3. The amount of Earthwork executed in District 2 is considered by the Chief Engineer as satisfactory with reference (Para. 5 of his letter) to the dryness of the weather and hardness of the soil. The latter is described as second only to rock and indeed mixed with it. A great part of the work done during the month referred to is in the valley of the Cortilliaur where I have never observed much rock, and where though the soil generally has been hard it is likely to be easier to work than on the higher grounds.

4. The season and the character of the country has been much the same in District 1—as it has been on the 1st Section of District 2, and yet considerably more work was done on the former.

5. The argument, however, adduced by Mr. Bruce in favour of taking time about the work, I consider of more importance, than the reason given for their apparently tardy proceedings during the month of March.

6. That Gentleman seems disposed to regulate his own progress here by that made in the supply of materials from Home. Independently of the desirableness of giving our Earthworks as much time as possible to settle, before bringing the line into use, I think the Chief Engineer of the Railway forgets that the longer the time occupied in executing any portion of the work, the higher the ratio which the expense of superintendence, salaries of Engineers, &c. will bear to the other portion of the expenditure: that in fact the same men, when they have completed one portion of the work will be available for the execution of another. It appears to me desirable, that the Agent should be informed that the works should be prosecuted with the utmost vigour consistent with a reasonable economy; and that it would be better not to regulate his proceedings by any reference to those of the Home authorities in furnishing supplies.

MADRAS, 16th June, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 145.

Extract from the Minutes of Consultation, dated 30th June, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 16th June, 1854, No. 147.)

It appears to the Right Honorable the Governor in Council, that there is much reason in the explanation given by the Chief Railway Engineer, regarding the small progress of the works during March last, in Districts Nos. 1 and 2. He is however of opinion that the Works should be prosecuted irrespectively of the receipt of supplies of materials from England, and he desires that Major Pears' observations on this point may be communicated to the Agent of the Railway Company.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

Remarks.

The progress during the past month has not been what I expected; and the cause of the falling off I am at a loss to discover.

I have written to the Engineers on the subject, and hope soon to be on Districts 1, 2 and 3 to see for myself.

We have had considerable difficulty at the Cortilliaur, in procuring proper stone which has retarded our operation there.

I regret that we have not been able to commence laying the rails for want of chairs.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

SHERVAROY HILLS, 20th May, 1854.

(Signed) E. SMALLEY,
Agent.

(Signed) R. ALLON,
Chief Clerk.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 35.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

I have the honor to submit Report for the month of April, showing the amount of work done upon Districts 1, 2 and 3 of the Madras Railway. I regret to have again to observe upon the unsatisfactory character of this report. On both Districts 1 and 2, the amount of Earthwork is small; the arrangements for executing that on District 3, are hardly complete. On District 1, the progress in Brickwork is small also; the Chief Engineer having made the mistake of including that executed in certain minor Station buildings, in the Brickwork executed, while the amount, as per Estimate, includes only Bridges, Drains, &c.

The progress in Masonry on District 2, appears fair.

I expect a further report from the Agent upon the cause of this falling off in the work during the month of April; and shall submit the same, when received, without delay.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
15*th June*, 1854.

On a Progress Report (E) dated the 17th July, showing the amount of work performed during the month of May, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The submission of this report has been delayed in consequence of a reference having been necessary for explanation.

2. The Masonry in District 2, is the only portion of the work, upon which any thing like satisfactory progress appears to have been made.

3. The Chief Engineer of the Railway explains in the District reports that in the matter of Earthwork in District 1, there is room for improvement; that in District 2, there is a decreasing quantity owing to the hardness of the soil, the necessity for rain and partly to the negligence of Contractors; and in District 3, the amount of work will speedily increase as a much larger portion is under operation.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP, PALMANAIR,
9*th September*, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 207.

Extract from the Minutes of Consultation, dated 19*th September*, 1854.

Read the following observations of the Consulting Engineer on Progress Report (E) forwarded by the Railway Agent.

(Here enter 9th September 1854, No. 211.)

The Right Honorable the Governor in Council cannot but regard the progress made

during the month of May last in the three Districts referred to as very unsatisfactory; and he resolves to bring the matter specially to the notice of the Honorable Court, with a view to its being represented to the Directors of the Railway Company. The Consulting Engineer will inform the Agent of the intention of the Government to make the above communication to the Home authorities.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

Remarks.

The progress on the second section of District 1 has not yet been what I could wish; there has been greater difficulty in getting Contractors here than any where else; and we are relinquishing the system altogether and doing the work by daily labour, by which I hope to insure more rapid progress.

The amount of Brickwork, entered as done, is less than was really executed, to make up for an error in the amount stated last month.

The stations are standing still by order of Government.

A fair beginning has been made with the Permanent Way, partly by daily labour, partly by Contract.

On District 2 there has been a slight improvement in the amount of Earthwork done during the past month, which there is every probability of increasing still further.

The Cortilliaur Bridge has been delayed for want of planking for the centres, this cause of delay has been removed and every exertion will be used to push it forward.

The ballasting and Plate-laying have been commenced.

(Signed) G. B. BRUCE,
Chief Engineer.

SHERVAROY HILLS, 29*th July*, 1854.

(Signed) E. SMALLEY,
Agent.

(Signed) R. ALLON,
Chief Clerk.

Remarks.

The work on District 1 has been a good deal retarded by the prevalence of sickness at some important points: some of the Rails have been laid by contract, but as they were not paid for, this work does not appear. The want of keys, trevails, and fishing plates, prevent the Plate-laying from advancing as it ought to do.

The Earthwork on District 2, as in the first District, has been delayed by the prevalence of sickness, though this is necessarily smaller as the work is more limited. It is principally confined to hard and deep cuttings or the finishing of embankments round the ends of Bridges.

The Arches of the Cortilliaur have: after considerable delays, been commenced, it is somewhat late in the season for this work but I expect all will go on well. The Plate-laying has been delayed for want of materials.

The work on the 3d District is progressing very favorably; and now that the whole line has been staked out on the section taken, it will increase still more.

There has been little done at the Madras Terminal Station, in consequence of not

receiving the sanction of Government to proceed with it until the beginning of July, it is however progressing favorably.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

SHERVAROY HILLS,
28th August, 1854.

(Signed) E. SMALLEY,
Agent.

(Signed) R. ALLON,
Chief Clerk.

On Report of Progress (E) for the months of June and July, dated severally the 29th July and 28th August.

OBSERVATIONS BY THE CONSULTING ENGINEER.

During these months the rate of progress in Earthwork in District 1 and 2 has been less than heretofore. It will be observed however that this portion of the work is drawing to a close, and the work remaining to be done is probably executed in detached portions by small gangs.

The works in Districts 3 are advancing very slowly, but the Chief Engineer anticipates improvement in this respect. The progress in Earthwork in this District, during June, was so bad, that the Agent has been requested to explain the reason, no reply has yet been received.

CAMP PALMANAIR,
16th September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,

Remarks.

The progress on the 1st District has altogether improved during the month of August.

A fair beginning has been made in Plate-laying; and now that fishing plates and bolts have arrived I expect there will be no delay.

It is a serious inconvenience not being allowed to proceed with the Station Buildings.

The Earthwork in the 2d District shows an improvement over the returns of last month.

A considerable amount of work has been done at Plate-laying; but it is not in such a state as to allow of its being conveniently measured as complete.

Five arches of the Cortilliaur Bridge have been keyed.

In the 43d mile, by a clerical error, 3,600 Cubic yards too much had been entered in the month of May as done, this has now been rectified.

The Earthwork in the 3d District is steadily increasing; though there is considerable room for improvement.

The progress at the Poiney River has been most satisfactory, all the foundations will be got in before the rains.

The Avadum Bridge has also progressed favorably, though no measurement was returned during August.

The small Bridges have not advanced so well as I could have wished.

The Madras Terminal Station building, in so far as it has been sanctioned by Government, is progressing favorably.

In the Workshops, a large portion of the woodwork has been prepared.

The Workshops at Madras and Palghaut are both doing well—are of great value to the undertaking. At Salem there has been great difficulty in getting work people; but this has been overcome by importing them from other Districts. I hope soon to make such small castings, and Iron work, as we require in the Salem District, in our own Shop.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)

SHERVAROY HILLS,
30th September, 1854.

(Signed) E. SMALLEY,
Agent.

Remarks.

District No. 1.—Section 2, of District 1, is not in a satisfactory condition, I am about to make a change in the superintendence, which I have no doubt will produce a marked improvement.

District No. 2.—Mr. Wilson reports that the reason, why so little Earthwork has been done on District 2, is that there are few points remaining to be completed; and those are nearly all in hard cutting where the process is necessarily tedious. As I have frequently before observed, this will not in the least affect the opening of the line.

The Plate-laying has gone on better; the Cortilliaur Bridge is advancing rapidly.

District No. 3.—There has been a marked improvement in the amount of Earthwork on District 3, which has steadily increased; it is very hard and more expensive, as a whole, than the other Districts. I may observe that the work at this date exceeds 32,000 Cubic yards per week.

Madras Station.—The work on the Madras Station has been proceeding very satisfactorily. I am unable to enter the estimated amount of the goods warehouse, as the Estimate books are away with my Camp.

(Signed) GEORGE B. BRUCE,
Chief Engineer.

SHERVAROY HILLS,
28th October, 1854.

(Signed) E. SMALLEY,
Agent.

(Signed) R. ALLON,
Chief Clerk.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 57.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

Having lately had occasion to pass down the line of the Madras Railway from Pulli-

condah, I have the honor to report for the information of Government that I found the state of the works on the several portions of the line to be as follows.

2. On District 4, (about Vellore) Mr. Collins, the Resident Engineer, has been engaged in surveying and taking trial sections. He has proceeded from Trivellum—on the Poiney river—to a point some miles beyond Pullicondah. The country is remarkably favorable: and as soon as the Chief Engineer of the Railway shall have come to a decision regarding the general course of the line, and the point at which the Palar shall be crossed, the line on this District may be staked out, and there need be little delay in commencing the work.

3. On District 3, lying between the 47th and 71st miles from Madras, the most important work is the Bridge across the Poiney at Trivellum. The foundations for this work have been commenced upon, and nearly the whole of the wells have been sunk. I consider the progress made in this work to be very creditable. The plans and Estimates, though the former have been submitted to me in the rough, are not yet, it would seem, in a sufficiently forward state to be laid before Government.

4. The "Earthwork" and the minor works of Masonry in this District are not in such a forward state as might have been reasonably expected. There has been however a decided improvement within the last few months in this respect. The Earthwork will be rather heavy. The Engineer, in charge, informed me that he could procure abundance of labourers on the 2d Section of his District—but on the 1st; the portion lying in the Sholinghur Talook—he had experienced much difficulty. I trust as the Engineers themselves acquire local experience we may see a marked improvement in the progress of these works. At present there is no doubt that they are in many cases necessarily dependent on the native servants about them, to an extent calculated to produce a very prejudicial effect on the cost and progress of the works. This evil is likely to be felt especially, at the present time, when there is so great a dearth of able and trust-worthy native Agents qualified for employment on the public works.

5. The progress made upon the works in District 2, I consider satisfactory. The amount of Earthwork, executed within a given time, has fallen off lately: but this may be in measure explained by a large portion yet remaining being rock, the blasting of which is a tedious operation. I apprehend also that much of the time and attention of the Resident Engineer has been bestowed lately upon the Cortilliaur Bridge, a work of some importance, and one which was desirable to push forward as much as possible in anticipation of the rainy season.

6. The works of Masonry generally on this District, are in a very forward state. They are almost wholly constructed either of rough dressed granite, or of laterite: and present a handsome and substantial appearance. The Bridge across the Cortilliaur is built of granite also. Out of 26 arches I found eleven keyed and eight in course of execution. There has been much praiseworthy care bestowed upon this work, which has been carried forward of late with great vigour. Its progress has, I am informed, been much interfered with of late in consequence of many bullock carts employed in connexion with it having been pressed for the service of a Native Infantry Regiment on march to Hydrabad. The supply of materials was stopped in consequence; the employment of masons interrupted, and the latter left the work: and when arrangements could be made for the carriage of stone it took time to collect the workmen again.

7. The Regiment in question took the road of Cuddapah: and we cannot wonder that the proprietors or drivers of the Carts who escaped the compulsory employment were glad to do so by dismantling their Carts, in many cases, secreting the wheels and leaving the cattle to take care of themselves. The season has been one that has pressed with unusual severity upon all this class of men; and the movement of the troops, will have been attended with unusual difficulties in consequence.

I am not without some apprehension for the safety of this work. The Chief Engineer of the Railway is likely to inspect this portion of the line shortly and under his instructions I doubt not but all that can be done to ensure its safety, will be done by the experienced and energetic Engineer in charge: but there can be no question, but that a heavy monsoon and one of our occasional high floods would place the Bridge, in its present unfinished state, in great peril. An ordinary fresh -even up to a full river—will do harm. I have only further to report upon this District that between 2 and 3 miles of Permanent Way have been laid. The work has been done, as most of the work on this District has been done, by day labourers. The natives employed upon this, the only description of work peculiar to a Railway, have shown great readiness and intelligence; and have in some cases acquired great skill in Plate-laying. There can be no doubt that, in a few months, gangs of Native Plate-layers will perform the entire work, under the general direction of the Engineers, as well as can be desired.

8. Of District 1, the first 25 miles from Madras, the report which I have to make is not quite so satisfactory. The principal amount of Earthwork remaining to complete is on the 2d Section, the whole of which exhibits much backwardness and mismanagement. Several of the minor works of Masonry have yet to be commenced. The Earthwork has all the appearance of being now, and having been for sometime, at a stand still, banks unfinished, and untrimmed, with rank grass growing about them. On the 1st Section, the works have a more complete appearance, but in many respects the quality of the work is open to objection. Plate-laying here is going on at three different points. Five or six miles have been laid but not permanently adjusted nor all ballasted. The high banks, within the limits of Madras have been injured by the rains not more than might be expected. I have called the attention of the Agent and requested him to communicate to the Chief Engineer the observations which I had occasion to make on the several portions of the line.

9. It is worthy of remark, that the work done by contract, has been generally inferior, and in every respect less satisfactory, than that executed by daily labourers. I would not argue from this, further than that a class of able and enterprizing Contractors, among the natives, have yet to be raised. I think such a class will yet be formed; but it will come from among those men who have been employed, and instructed among the day labourers on the Railway, and other important public works.

10. There is generally an appearance of cheerfulness and contentment among the day labourers, working in immediate communication with the Engineers, and their European subordinates that we do not find among the paid labourers of Native Contractors. I do not speak here of Wudder Contractors who are a peculiar class undertaking only small works. Of other natives, who come forward as Contractors, the common characteristics are, bad work, shabby and irregular payment, resulting almost invariably in the desertion of their labourers, and the loss of their contract. These men have yet to learn that there must be personal energy, and ability, combined with just and liberal treatment of their own Agents, if they would find profitable employment, as Contractors for public works.

I have, &c.,

MADRAS,
28th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

P. S.—Since writing the above I have been informed by the Chief Engineer of the Railway that he is aware of the backward state of the works on the 2d Section of District 1; and that it is his intention to take immediate measures for pushing the work forward on that portion of the line.

On Reports of Progress (Form E) for the months of August and September, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

These reports up to September refer to the first three Districts alone; that is about 70 miles from Madras.

No. 57, dated the 28th October, 1854.

I have made a special report upon this portion of the work subsequently to the date of these reports, which however serves to show that the estimated amount of work in Masonry and Earthwork in Districts 1 and 2 is drawing near completion, and that the show of work on District 3 is steadily increasing.

MADRAS,
13th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
11th March, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you copies of Reports received from Mr. Gale and Mr. Beattie.

2. The small progress made with the surveying of the respective Districts is not to be attributed to any fault on the part of these Gentlemen; but to the deficient supply of Instruments placed at their disposal.

Mr. Beattie and Henderson were without Instruments for nearly two months, waiting for their arrival viâ the Cape; and Messrs. Gale and Ross had only one Theodolite and one level staff.

On District 3, Mr. McMaster has set out the greater part of it and taken the section of the 1st seven miles which is being prepared for submission to Government. Mr. Hederstedt has for some weeks been engaged in examining the bed of the River Poiney to ascertain the best foundation for the Bridge, on which, I hope, to report in a few days. The work on this District is being commenced.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY,
2d March, 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

I beg to report that in conjunction with Mr. Ross I have taken a detailed section of the country through which the Railway is proposed to be made, from Thinganellore to Beg and Termmaliapolliem, a distance of 14 miles. In the first five miles there is a total rise of 33 feet, after which the ground falls towards the west, on an average 50 feet per mile, for the next five miles. I have set out, and nearly completed the levels

over another line to the north of that marked on the Plan, the gradients on which I have reason to believe will prove more favorable.

I am, Sir,
Your obedient Servant,
(Signed) J. W. GALE,
Resident Engineer, Malabar Division.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

To E. SMALLEY, ESQUIRE,
For information.

CAMP MOROOR, *4th March*, 1854.

G. B. BRUCE, ESQUIRE.

DEAR SIR,

According to the order in your letter of the 25th Ultimo, I beg to report the state of my proceedings up to this date.

I have got four miles of District No. 8 surveyed, as also eight miles of the heaviest jungle cut.

Not having received Theodolite, &c., from England until two days ago, I have been unable to proceed with the trial sections, but shall commence with these on Monday first.

I am,
Yours truly,
(Signed) ALEX. BEATTIE,
Resident Engineer, Districts No. 7, 8 *and* 9.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

To E. SMALLEY, ESQUIRE,
For information.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer,
For information, 14th March, 1854.

On Copies of Progress Reports submitted by the Agent of the Madras Railway Company, dated 14th Instant.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The progress reported by the Resident Engineers in Coimbatore and Salem is small enough for the time they have been at work; but considering the disadvantages under which these Gentlemen labour as new to the country, aided by servants, public and private, hastily got together, and, probably, not even in the majority of cases, well qualified men, the small amount of work done may admit of satisfactory explanation.

The Board in England should be warned against committing again the mistake of

sending Engineers without Instruments. These are not always to be procured in this country, even in the Government Stores.

MADRAS,
15*th March*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 65.

Extract from the Minutes of Consultation, dated 22d March, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 15th March 1854, No. 63.)

1. The Government regret the small progress that has been made in the work in the Coimbatore and Salem Districts, but concur with the Consulting Engineer that due allowance may be made for the Engineers, to whom the country is new, and who it appears have been until lately without proper instruments to carry out their Surveys.

2. The Government will bring to the notice of the Home authorities the just remarks of the Consulting Engineer regarding sending out Engineers without Instruments. The Government trust that the next report will show better progress.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 11*th May,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you the Fortnightly reports received from Messrs. Gale and Beattie, which I consider satisfactory.

2. I have also received the section and survey of a portion from Mr. Gale, which shall be forwarded as soon as the copy for Government is ready.

3. A copy shall also be prepared for the Board of Directors in England.

4. On the 29th April, Mr. McMaster had staked out and taken the section as far as 60½ miles, measuring from Madras; 13½ miles of the 3d District.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

1*st May,* 1854.

GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

Since my last report we have completed the cutting through Walliar Jungle, the

distance cleared this month being eleven miles. In addition to this I have cut about six miles of Jungle between this and Palghaut, making seventeen miles of clearing, part of which was not found available, owing to the difficult nature of the ground. The section and sketch survey are complete to as far as the coolies have cleared, and I hope to be able to send you the plan and section to Kulpaty (Palghaut) in 10 days from this.

2. Mr. Ross has been absent during the greater part of this month, ill of fever, caught in the Jungle, and is not yet sufficiently recovered to resume his duties in the field.

I have, &c.

(Signed) J. WALTER GALE,

Resident Engineer, Malabar Division.

FORTNIGHTLY REPORT.

Camp Pillaputty, 3d May, 1854.

G. B. BRUCE, Esquire.

Dear Sir,

Since sending in the Plan and Section of the South end of No. 8 District, I have moved to the North end, and have got four miles of Survey and Section finished, and nearly all the Jungle cut. I have not been able to get any Section done for some days, and it will be some days yet before I can continue it; as Maistrics and Workmen have arrived and I have had to set them agoing with my own and Inspector's Bungalows, and these I find I will have to look after myself for some days, as my Inspectors have not yet returned from Bangalore.

2. Mr. Henderson on District No. 7, has been delayed for the same causes: he has got four miles surveyed and sectioned. I am happy to say that on the line likely to be adopted, there is little jungle; but I think he will have to take some levels across country where there is jungle, but I do not anticipate any great delay from this.

I remain, &c.,

(Signed) ALEX. BEATTIE,

Resident Engineer, Shervaroy Division.

To the CHIEF ENGINEER,

Madras Railway.

(True Copy.)

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

To the CONSULTING ENGINEER,

For information, 15*th May* 1854.

Submitted (with observations) for the information of Government.

Madras, 17*th May,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,

Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 11th May, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to acknowledge the receipt of your letter, dated 6th instant, regarding Mr. McMaster.

2. Mr. McMaster has had little assistance from Mr. Hederstedt, besides the examination of the bed of the river Poiney in various places to secure the best site for the Bridge.

3. When this was completed in March last, Mr. Hederstedt joined Mr. Wilson, at the Cortilliaur, by my orders.

4. I have full confidence in Mr. McMaster's capacity, industry and sense of duty; but having begun work when he had little assistance from his Inspectors, he has not been able to devote as much time as he would otherwise have done, to taking out the line which consequently has lagged behind.

5. He is making bricks at the Poiney; doing Earthwork at Minel; and building Bungalows along the whole line, which of necessity divert his attention.

6. I am satisfied that Mr. McMaster has made and is making "the best use of his time."

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER,
With reference to Form E, District 3, *for March.*
15th May, 1854.

Submitted (with observations) for the sanction of Government.

MADRAS, 17*th May,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On Report of Progress forwarded by the Agent of the Madras Railway Company, dated the 15*th May,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Reports of Coimbatore are brought up to the 1st Instant, that for Salem to the 3d.

2. The Engineers have been at work since the beginning of February. The surveying has not been in either case effected without the necessity of a great deal of jungle cutting.

3. The work upon the whole has not been satisfactory, but the delay, I believe, occurred chiefly at the commencement; and the work will, I hope, be found to advance more rapidly in future.

4. I shall remind the Agent of the necessity of sending in reports of this nature every fortnight. A survey and section upon 13 miles of the line near Salem was forwarded by Mr. Bruce some days ago, and has been returned with the request that further trials might be made: the line marked for the pass near Moroor being objectionable in some of its features.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
17*th May*, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 120.

Extract from the Minutes of Consultation, dated 30th May, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 17th May, 1854.)

The Government observe that though the progress made does not appear very great, the reports of the Engineers are satisfactory as they show that they had performed very hard work, but have not been successful in finding a good line.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
29*th May*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Fortnightly reports received from Messrs. Gale and Beattie Resident Engineers.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

Palghaut, 15*th May*, 1854.

G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

The levels and sketch survey are now completed to the Moondoor Road abreast of Palghaut, and the Plan and Section, will be ready in a few days.

2. Of Jungle the coolies have cleared since my last report, a distance of about four miles, and the length of Section and survey taken has been seven miles.

I have, &c.,

(Signed) J. W. GALE,

Resident Engineer, Malabar Division.

(True Copy.)

(Signed) G. B. B.

Chief Engineer.

FORTNIGHTLY REPORT.

Pillaputty, 15*th May,* 1854.

MY DEAR SIR,

Since reporting to you last, I have got the Section from Moroor to join District No. 7, at Chentelpandy completed, and also 13 miles from Chentelpandy Eastward on District No. 7, and the plans will be sent to you in a few days.

2. Some considerable progress has been made in erecting Bungalows on District No. 8, and the Engineer's Bungalow on District No. 7, has been commenced.

I remain, &c.,

(Signed) ALEX. BEATTIE,

Resident Engineer, Shervaroy Division.

G. B. BRUCE, ESQUIRE.

(True Copy.)

(Signed) G. B. B.

Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

To THE CONSULTING ENGINEER,

For information, 2d June, 1854.

Submitted (with observations) for the information of Government.

MADRAS,
5*th June,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,

Fort St. George.

On a Report of Progress by the Chief Engineer of the Madras Railway, dated the 29*th May, forwarded by the Agent of the Madras Railway Company,* 2*d June,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The progress of the works in these Districts appears to be satisfactory. The Engineers have to contend with a great deal of close Jungle.

MADRAS,
5*th June,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,

Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
10*th July*, 1854.

No. 228.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

8th June, to 1st and 20th June.

I have the honor to forward Messrs. Gale and Beattie's Fortnightly Reports received by me from Mr. Bruce on the 5th and 8th instant.

2. I think it would be more satisfactory if Mr. Henderson and Mr. Ross were to make their own reports. They might be forwarded by the Resident Engineer with any remark he thought necessary.

3. There is no report from Mr. McMaster.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

CAMP AKRACOOPPUM,
14*th July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
— *July*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Fortnightly Reports received from Messrs. Gale and Beattie, Resident Engineers.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

MADRAS (RAILWAY) ENGINEER'S OFFICE,
Palghaut, 8*th June*, 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In accordance with your instructions I have the honor to lay before you the following report of the result of my examination of the country, which it is proposed to carry the Railway from Coimbatore to Palghaut.

2. The line, as laid out, crosses the Trichinopoly road, on the level, at a point near Shinganellore, about four miles east of Coimbatore. It thence proceeds, in a south westerly direction, for a distance of 5½ miles across the large tank, and past the village Nunjun-

daprum to a point on the Poolacherry road, about one mile east of Koorchy: at Nunjundaprum the river Noyel is crossed. With the exception of the Bridge over the river and some culverts, no works except of the lightest character will be required for this portion. The surface of the ground will admit of very easy gradients.

3. From the Poolachy Road the line follows a valley running close to Maduckurray. The fall here is rapid—averaging 50 feet per mile for a distance of three miles; at this point the line leaves the Maduckurray Valley, and after crossing a ridge, follows as nearly as the ground will admit, the side of a Valley running parallel to the trunk road until it enters the jungle at the 14th mile. The fall throughout this distance is great, and the ground is broken by considerable ravines with intervening spurs, running at right angles to the principal Valley, a great difference of level consequently exists on each side of the line. The Northern side of the Valley has been selected as the most favourable, and, as a rule, the ground slopes southward. By introducing sharp curves much of the excavation and embankment shown on the section may be obviated. The masonry, required for this portion, will consist of a few culverts only.

4. The land, along the course of the line, up to this point, is cultivated from Shinganellore to Nunjundaprum; it consists of paddy fields and plantain or cocoa topes: beyond Nunjundaprum it is entirely dry cultivation. The soil, superficially, appears to be a light yellow sand, containing near Coimbatore nodules of limestone and quartz. In the neighbourhood of the 8th mile, large masses of rock appear on the surface; generally, from this point westward, to Palghaut rock may be expected at a short distance below the surface.

5. From the 14th mile, to the 24th, the course of the line lies through Walliar jungle the ground throughout this distance is very rough the valleys or, more properly, ravines, are short, and intersect each other in every direction, and immense masses of rock are found rising above the general surface. On all sides an extensive clearing of the jungle, which is quite impenetrable, except by the foot paths, and a more minute examination, is necessary, before the best course for the Railway here can be definitely laid down. The general features of the ground indicate, that rock will be found very near the surface. The Masonry required will consist of three Bridges of small span and several culverts.

6. At a distance of 24 miles 61 chains the Trunk Road is again crossed on the level at about one mile east of the Village of Congegaud (marked Chuthrum on the Map). The road will have to be raised.

7. From this point, for a distance of 6 miles, the line passes through jungle with a few paddy fields. The cultivated land is mostly level; the jungle uneven and rough. I have indicated by the dotted line on the Plan, the position for the line which as far as I am able to judge, will be the least objectionable. But here as in the Walliar jungle it is impossible to tell what the character of the ground may be at any particular spot, without a more extensive clearance of the jungle than has yet been made. The gradients will be easy, and the earthwork of an average character. The Masonry required will be two Bridges of small span and culverts.

8. From the 31st mile, to the crossing of the Moondoor Road, on the level at 33 miles 5,920 chains the line passes over paddy fields almost on the surface. The earthwork will consequently be light, the Masonry consisting of small culverts only. The total fall to this point is 1,015 feet.

9. The substratum west of Walliar does not differ much from that at Coimbatore: it consists of a light red sand containing boulders of primitive rock. In dry weather the ground is exceedingly hard, but since the monsoon has set in, the rain has rendered it soft and treacherous.

10. I had hoped to have been able with this to have given the result of the examination by Mr. Ross of the valley south of Madukurray, but the unexpected relapse of fever he has suffered has obliged him to return to Coimbatore, leaving the examination just commenced incomplete.

I have, &c.,
(Signed) J. W. GALE,
Resident Engineer, Malabar Division.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

FORTNIGHTLY REPORT.

SHERVAROY HILLS, 1*st June*, 1854.

MY DEAR SIR,

Since reporting to you last, Section No. 1, of District 8, and Section 2, of District 7 have been completed and the Plans and Section sent you.

2. The Engineer Bungalow on District No. 7, is progressing slowly. The Engineer's Bungalow on District 8 has made considerable progress, and Bungalows for Apothecary and Sub-Inspector have been completed. I am sorry to say the Engineer's Bungalow on both Districts have received very considerable damage from the rains and hurricanes of last week and since then some difficulty has been found in getting workmen, as the people of the District have been engaged on their lands.

4. The setting out of the line on District No. 8 will be commenced when you have obtained the sanction for me to do so.

(Signed) A. BEATTIE,
Resident Engineer.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

FORTNIGHTLY REPORT.

RAILWAY OFFICE, MULLAPOORAM,
20*th June*, 1854.

DEAR SIR,

Since reporting to you last, I am sorry to say the progress on Districts No. 7 and 8 has not been such as I could have wished.

2. On District No. 7, Mr. Henderson has got his survey completed over the most difficult part of his line, he has not been quite well, otherwise it might have been nearly completed. His Bungalow is still progressing slowly on account of the want of workmen.

3. On District No. 8, I have got the Brickwork of my Bungalow all but completed. I may here remark that great delay and extra cost has been caused by the difficulty in getting workmen to come here or to remain, when they do come, notwithstanding I give them two days batta for coming from Salem. I have got commenced with the improvements on the road through the Moroor Ghaut, which will be of great be-

nefit to us, as at present it is nearly impossible to get bandies to come here from Salem with stores, &c., and likewise I think there may be less difficulty in persuading workmen to come here when they have a road to come along.

4. It was my intention to improve a small portion of the road between here and Darampory as two Bandies have already been overturned on it, and there is difficulty in getting the Bandies from Madras or Darampoory to come this length; but I find from Captain Ouchterlony the Engineer of this District, that Government are immediately to proceed with the improvement of it.

5. I am sorry I have not been able to get any portion of the line staked out yet as I have had two attacks of fever since reporting to you last, and am afraid, I have not quite yet got quite over it, although very much better.

6. On my examination of the Salem Workshop last week, I found the works progressing as well as could be expected, seeing that there also, there is difficulty in getting workmen; but Mr. Causaker expects, that this will soon end as he is getting workmen, from Madras and Trichinopoly, on whose regular attendance on the shops he may depend.

I remain, &c.,
(Signed) ALEX. BEATTIE,
Resident Engineer, Shervaroy Division.

G. B. BRUCE, Esquire,
Chief Engineer, Shervaroy Hills.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 228, *dated* 10*th July,* 1854.

Observations by the Consulting Engineer.

1. The Agent submits Fortnightly Reports of progress from the Engineers employed in charge of the Malabar and Salem Divisions. These reports are sent in, I regret to observe, very irregularly; neither can they be considered thus far satisfactory. Each of these Division Engineers has one Assistant Engineer under him, and several European Inspectors.

2. They have been upwards of four months on this work, and the surveys have certainly not advanced, so rapidly as might reasonably have been expected. I have received drawings with sections of about 30 miles in the one case (Salem) and 15 in the other. Several of the Engineers appear to have suffered from sickness.

3. Further trials are being made near Coimbatore, and these drawings will be submitted to Government as soon as they shall have been rendered more complete.

4. There is no report from the 3d District, the survey of which is still incomplete; and indeed the irregularity exhibited in the submission of these reports, the preparation of which can be attended with no difficulty, is quite unaccountable.

5. On the Agents suggestion, that reports of this nature should be signed by the Assistant Engineers for their respective Districts, I have only to observe, that that Gentleman, would doubtless do well to make himself acquainted with the manner in which each individual under his orders is acquitting himself of his duty; but that as far as

Government is concerned the Agent, as the representative of the Railway Company, must necessarily be looked to to make the best arrangements in his power, both for the satisfactory execution of the work, and for the regular and accurate preparation of reports, &c.

6. I conceive that all these reports are made by the Agent, and that it is merely a convenient way for him to make such reports, that of forwarding copies of those which he receives from his subordinates.

CAMP AKRACOOPPUM, 14*th*. *July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 164.

Extract from the Minutes of Consultation, dated 22d July, 1854.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 14th July, 1854.)

Para. 1. The Right Honorable the Governor in Council agrees with the Consulting Engineer that the progress is not as satisfactory as could be expected, though making allowance for the difficulties of the Railway Officers working in a country quite new to them.

2. The Government look to the Agent to control the Officers in his Department, and leave it to him to arrange in any way he may think best for procuring the information from them on which he may ground his reports.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
1*st July*, 1854.

No. 239.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I beg to send you a Fortnightly Report received from Mr. Gale, dated 15th June, in lieu of one returned by me.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

CAMP CANOOMOOLOPULLY, 29*th July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy, *15th July*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you a correct Fortnightly Report received from Mr. J. W. Gale at Paulghaut, in lieu of one returned with your letter of the 5th Instant.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

PAULGHAUT, *15th June*, 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

I set out the line and took levels for two miles beyond the Moondoor Road Westward, the beginning of this month, when I was obliged to cease owing to the rains. The ground is very favorable and the Earthwork will be light. Mr. Ross is still unable to take part in the Surveying.

I have, &c.,
(Signed) J. W. GALE,
Resident Engineer, Malabar Division.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER,
For information, 21st July, 1854.

On a letter from the Agent of the Madras Railway Company, No. 239, *dated 21st July*, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

A Report of progress by Mr. Gale the Engineer at Coimbatore is submitted, and is certainly not very satisfactory. Mr. Gale writes on the 15th of the month that he had set out the line and taken levels for two miles at the beginning of the month, when he was obliged to cease on account of the rain.

Mr. Gale has plenty of work near Coimbatore where the rain, even at this season, is generally scanty, but he writes from Palghaut where he will be in the thick of the Malabar monsoon. The work is going on very slowly in those quarters.

CAMP CANOOMOOLOPULLY, *29th July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort. St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 13*th July*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Fortnightly Reports received from Messrs. Gale and Beattie, dated 1st July.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

CAMP, AMMAPOLLIEM CHOULTRY,
1*st July*, 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

Finding that Mr. Ross was not sufficiently recovered to undertake any out-door work, I came out here last week, and commenced laying out and levelling a line to the North of the trunk road. I have completed 4½ miles of Section, and have engaged 40 coolies to cut through the Jungle in our front. I leave on the 2d Instant for Echanary to examine the country in that neighbourhood, while the Jungle is being cleared towards Walliar.

I have, &c.,
(Signed) J. WALTER GALE,
Resident Engineer, Malabar Division.

(A True Copy.)
(Signed) G. B. B.
Chief Engineer.

MULLAPOORAM, 1*st July*, 1854.

MY DEAR SIR,

Since reporting to you last, the survey and Section of District No. 7, has been completed, and the thatching of the Engineer's Bungalow has commenced.

2. On District No. 8, the Engineer's Bungalow is half thatched, and some progress has been made with the Inspector's Bungalows, and the improvement of the road from Codiamputty through Moroor Ghaut is progressing very fairly.

3. I have been unable on account of the fever I have had, to commence laying off the line but have made arrangements to commence on Monday first, when I hope to be all right.

4. The Survey and Section of District No. 7, will be sent in a few days.

I am,

Yours truly,

(Signed) ALEX BEATTIE,

Resident Engineer, Shervaroy Division.

To G. B. BRUCE, Esquire,

Shervaroy Hills.

(A True Copy.)

(Signed) G. B. B.,

Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

To the CONSULTING ENGINEER,

For information, 21st July 1854.

Submitted (with observations) for the information of Government.

Camp Canoomooloopully, *29th July,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,

Fort St. George.

On letter from the Chief Engineer of the Railway, dated the 13th July, with Progress Report forwarded by the Agent of the Madras Railway Company.

Observations by the Consulting Engineer.

These reports from Messrs. Gale (Malabar Division) and Beattie (Salem) are dated the 1st of July. The former Gentleman speaks of coming out last week, having as shown in previous Progress report performed during the month two miles of setting out. The best course of the line near Coimbatore is not yet determined: the country is there, generally, open, and the trial section should have been in long before this.

The progress made by Mr. Beattie is not very satisfactory either; but it may be hoped that better progress will be made in the execution of the work, when these Gentlemen have become accustomed to the country, than has been hitherto made in these preliminary proceedings of surveying and setting out.

Camp Canoomooloopully, *29th July,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,

Fort St. George.

Financial (Railway) Department.

No. 147.

Extract from the Minutes of Consultation, dated 8th August, 1854.

Read the following observations of the Consulting Engineer on letters from the Agent of the Madras Railway Company.

(Here enter 29th July, 1854.)

The Right Honorable the Governor in Council considers the reports submitted with

the Consulting Engineer's observations of the 29th July unsatisfactory. The Consulting Engineer will call the serious attention of the Agent to the very slow progress which is making in the surveying and marking out of the line in the Coimbatore and Salem Districts. The Chief Railway Engineer it is observed omits to express any opinion on the reports of his subordinates.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 5th August, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Fortnightly Reports received from Messrs. Gale, Beattie and Collins, Resident Engineers.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

II. DIVISION.

No. 4 District.

FORTNIGHTLY REPORT.

MADRAS RAILWAY, RESIDENT ENGINEER'S OFFICE,
Vellore, 31st July, 1854.

Report on the Progress of the Survey from the 22d to the 31st July 1854.

The total length of survey completed up to the date is four miles, thirty-six chains: being an advance during the week of two miles, thirty-six chains.

2. The total length of trial Section completed is six miles, seven chains; being an advance of four miles and seven chains during the past week.

3. The line, as at present laid down, passes quite above the large tanks of Churnambutte and Parmaram, and will intersect no paddy fields or other cultivated land from the Tondroy Tank, near Trivellum, to the Chittoor road opposite to Vellore.

4. The high winds, which prevailed during the whole of last week, impeded very much the progress of the levelling and instrumental portion of the surveying.

5. Sickness (dysentry and fever) prevails very much among the labourers employed on the survey, which will oblige me to increase the number of Cooly Lascars in order to keep up the requisite number of men in the field.

6. I forgot to mention in my last report that about the commencement of the survey Mr. Fenwick, Assistant Engineer, No. 5 District, met with an accident which has confined him to his room ever since.

7. In riding along the old Pioneer road, his horse slipped when crossing one of the paved water courses, and he received a fall which dislocated his leg at the knee, and fractured a portion of the bone. However, I am happy to say he is rapidly recovering from the effects of the accident, though sometime, of course, must elapse before he is able to return to the Camp.

(Signed) JAMES COLLINS,
Resident Engineer.

GEORGE B. BRUCE, Esquire,
Chief Engineer, Shervaroy Hills, Salem.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

Coimbatore, 1*st August*, 1854.

GEORGE B. BRUCE, Esquire,
Chief Engineer, Madras Railway.

Sir,

The rain in the neighbourhood of Walliar has continued to fall since my last report without scarcely any intermission; I have in consequence been unable to take any levels.

2. The coolies have cleared a further distance of nine hundred yards in the direction of the new line laid down.

I have, &c.
(Signed) J. WALTER GALE,
Resident Engineer, Malabar Division.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

Mullapooram, 3*d August*, 1854.

Dear Sir,

Since reporting to you last, Mr. Henderson has been engaged Sectioning along a portion of District No. 6, with Mr. Latham, so as to form a junction of No. 6 and 7 Districts. The Engineer's Bungalow on his District is all but completed, and only awaits some doors and windows. Some progress is also being made with a Sub-Inspector's Bungalow.

2. On District No. 8, the Engineer's Bungalow is all but habitable, awaiting doors and windows also. The Inspector's Bungalow at Mullapooram will be thatched this week, and the Inspector's Bungalow at Vadiumpully is well advanced: two Sub-Inspectors houses are finished.

3. One mile and a quarter of one of the most difficult parts of the Moroor Ghaut Road has been improved.

4. The Contractors for Bricks have commenced Brick-making, both at Mullapooram and Talantum, but on account of the rains have not been able to do much.

5. I am sorry to say I have not been able to continue the staking out of the line, as I had not sufficiently recovered until about a week ago to do so, and had then my monthly account Forms and payments to make, but I intend commencing to-morrow.

6. I am happy to say that fever has disappeared from this District, and that a good number of coolies have come into the villages; and I am now in hopes that little difficulty will be found in these workmen, but Bricklayers and Brick-makers are still difficult to be had, but when we have a road from Salem, and also the Government new road from Darampoory, we will not be so much out of the way.

I remain, &c.,
(Signed) ALEX. BEATTIE.

G. B. BRUCE, Esquire,
Chief Engineer.

(True Copies.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

To the CONSULTING ENGINEER,
For information, 10*th August,* 1854.

Submitted (with observations) for the information of Government.

Camp Pairoor,
22*d August,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

On Progress Reports forwarded by the Agent with Memo., dated 10*th August,* 1854.

Observations by the Consulting Engineer.

The progress made in the survey of District 4 (Vellore) appears under all the circumstances satisfactory.

Little progress appears to have been made by Messrs. Gale and Beattie on their respective Districts. This is, in a measure, explained by the occurrence of continued rain in the one case, and by the sickness of the Engineers in the other.

Camp Pairoor,
22*d August,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

Financial (Railway) Department.

No. 198.

Extract from the Minutes of Consultation, dated 8*th September,* 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 22d August, 1854.

The Governor in Council desires to have the opinion of the Agent and of the

Chief Railway Engineer on these progress reports. It appears to His Lordship in Council that but little work is doing, and he would wish to be informed what supervision the Chief Railway Engineer exercises over the proceedings of his subordinates.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 20th July, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Fortnightly Reports received from Messrs. Gale and Beattie, dated 15th July.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

MULLAPOORUM, *15th July,* 1854.

DEAR SIR,

Since reporting to you last, the Plan and Section of the remaining portion of District No. 7 has been finished, and which I now send you. The Engineer's Bungalow on this District has progressed but slowly during the last fortnight, on account of the rains through which it has received very considerable damage. Some progress had been made with Sub-Inspector's Bungalows, but I believe the heavy rains have nearly destroyed what has been done. Brick-making has been commenced at the Panar Bridge.

2. On District No. 8, the Engineer's Bungalow has also progressed very slowly, on account of the rains and other causes; it has also suffered from the rains, but not severely. On one Inspector's Bungalow the Brickwork has been nearly completed; and for the other the bricks are being made. One Sub-Inspector's House at the Salem end is progressing favourably.

3. The improvement of the road through Moroor ghaut is progressing pretty favorably.

I am, yours, &c.,
(Signed) ALEX. BEATTIE,
Resident Engineer, Shervaroy Division.

G. B. BRUCE, ESQUIRE.

(True Copy.)

(Signed) G. B. BRUCE,
Chief Engineer.

COIMBATORE, *15th July,* 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

I encamped at Echanary on the 3d Instant, and made a careful examination of

several valleys in that neighbourhood, the result of which I have the honor to submit in a separate Report. The distance levelled has been about three miles. On the 10th Instant, I moved back to Ammapoliem Choultry.

2. The Coolies have cleared the jungle in the direction of the new line down a distance of three miles; and as far as I can judge the ground is more favourable than on the other line south of the Trunk road. The rains commenced on this side of Walliar immediately after I moved. I have been in consequence unable to take my levels since I left Echanary.

I have, &c.,

(Signed) J. WALTER GALE,

Resident Engineer, Malabar Division.

(True Copy.)

(Signed) G. B. BRUCE,

Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

To the CONSULTING ENGINEER,

For information, 24th July, 1854.

Submitted (with observations) for the information of Government.

Camp Palmanair,
7th September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Railway Department,
Consulting Engineer's Office.

No. 168.

From Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

Before submitting to Government the Fortnightly Reports of progress forwarded with Mr. Bruce's letter of the 20th Instant, I do myself the honor of requesting I may be informed when it is likely that the "whole section to Palghaut" referred to, in the 5th Para. of Mr. Bruce's letter of the 31st May last, will be submitted to Government.

I request also that you will favor me with your opinion upon these progress reports for the information of Government; as the work done especially in the Malabar Division appears to me to be very small. Mr. Bruce in his letter of the 30th June above referred to, alluded to some deviation levels about to be taken.

From a conversation which I had with that Gentleman upon the subject, I understood that some of these were on the high ground near Coimbatore. The country for some miles West of that Town is quite open; and the rain seldom falls heavily there as in Malabar. I cannot but think that long ere this the best line near Coimbatore might have been determined, staked out, and Surveys and Estimates for that section submitted to Government.

I have, &c.,

Camp Cunoomoolopully,
29th July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras Railway Agency Office,
17th August, 1854.

No. 268.

From EDWARD SMALLEY, Esquire,
Agent.

To Lieut. Col. T. T. PEARS, c. b.,
Consulting Engineer.

Sir,

1. I have the honor to acknowledge the receipt of your letter of the 29th Ultimo,
5th August 1854, No. 307. respecting the Progress Reports of the Assistant Engineers and to transmit copy of a letter which I addressed in consequence to the Chief Engineer of the Railway together with that Gentleman's reply.

2. Mr. Bruce reports that a good deal of work has been subsequently performed; and that he has written to his Assistants strongly urging greater exertion on their parts.

3. I think the Chief Engineer entertains a wrong impression respecting extra Tent allowance.

4. In the 4th Para. of the letter from the Board of Directors, dated 13th June, 1853,
Forwarded to the Cons. Eng. on the 17th Aug. 1853. they determine that the Assistant Engineers are to draw, when under canvass, three Rupees a day, and one Rupee a day, when not drawing the higher rate. The fixed tentage was subsequently increased to two Rupees per day. In the Extract of the Minutes of Consultation forwarded to me by you on the 29th of October, the Government allow the Assistant Engineers fixed tentage at one Rupee per day when not under canvass, and three Rupees per day while under canvass, or travelling in the performance of their duties, which is to cover all expenses of conveyances, carriage of tents and baggage. The fixed tentage, as before observed, was afterwards increased.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Camp, Palmanair,
7th September, 1854.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

Madras Railway Agency Office,
29th August, 1854.

No. 307.

From EDWARD SMALLEY, Esquire,
Chief Engineer.

To GEORGE B. BRUCE, Esquire,
Chief Engineer.

Sir,

29th July 1854, No. 168. I have the honor to forward Copy of a letter from the Consulting Engineer.

2. To enable me to reply to Major Pears respecting the Progress Reports of Messrs.
Dated 15th July. Gale and Beattie forwarded with your letter of the 20th July, I shall be glad to learn how far you yourself consider them satisfactory,

3. The letter of Mr. Beattie gives an account of work done in the 7th District by Mr. Henderson; but of his own District, No. 8, he scarcely says any thing to show progress. Perhaps sickness has been the cause of so little having been performed, but this is not stated and I find that Mr. Beattie has drawn the full amount of extra tentage in April, May and June, which would imply that he has been employed on the line.

4. Mr. Gale's report of the 15th July says but little; and yet in a letter, dated the 14th July, he forwarded Plan and section of line between Coimbatore and Palghat. More therefore may have been done than is reported. The rains to the eastward of Palghat do not usually prevent out-door work at this season of the year, but of course in Malabar the case is different.

5. Mr. Gale makes no mention of Mr. Ross. That gentleman has, I believe, suffered much from fever, but if such is the case, it should be reported. I observe that Mr. Ross also has drawn full extra tentage for the months of April, May and June.

6. I shall be happy to lay before Major Pears for the information of the Government any remarks you may wish to offer in explanation of what now appears unsatisfactory progress.

7. I would take this opportunity of suggesting that each Assistant Engineer should make his own Report forwarding it through the Resident Engineer.

8. There has been no Fortnightly Report from the 3d District, under Mr. McMaster. The amount of work performed in that District, since the month of December, appears very small, and Mr. McMaster does not seem to have shown himself deserving of the increase of salary bestowed upon him by the Board of Directors.

I have, &c.,

(Signed) E. SMALLEY,

Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 9th August, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 307, enclosing one from Major Pears, No. 168.

2. I regret that I cannot say there is no ground for the complaint made by that Gentleman concerning the progress on the Divisions under Messrs. Beattie and Gale; for though there have in both cases been drawbacks, I cannot help saying that I expected long before this to have submitted the complete Sections and Estimates to Government.

3. Mr. Beattie has been very often sick of fever, and for two months has done little; Mr. Henderson has been fully engaged; and since leaving Mr. Beattie has finished the whole of his trial surveys.

4. On the Malabar Division Mr. Ross has been of little use for a long time on account of fever which must materially have retarded the work.

5. Some of the enquiries made by Major Pears have been anticipated. The best

line has been found in the neighbourhood of Coimbatore as per my letter, dated 28th July 1854, and the plan and section have been forwarded; they were delayed by my being in Madras.

6. Whether the Engineers are sick or well, they are necessarily in Tents until the Bungalows are built, which accounts for the full charge of extra tentage.

7. Mr. McMaster's Fortnightly Reports have been discontinued, because his works being under construction, I receive the usual short weekly report, and Government receive it in Forms D and E. By the present month's return you will see that he has made most creditable progress in his principal work, the Poiney Bridge, and he has set out his line up to 70 miles from Madras. Some of his Surveys are in my Office in the course of preparation for Government.

8. I shall communicate to the Engineers that attention has been drawn to the slow rate of progress, and urge them to increased exertion, which I hope, will prevent the matter being pursued any further by the Government.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

On a Report of Progress of the Chief Engineer, dated the 20th of July, and letter from the Agent, No. 268, dated the 17th August.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The progress reported herein appeared to me so very far from satisfactory that I called upon the Agent for explanation and also for his opinion therein. The accompanying letter is that Gentleman's reply.

2. One of the Assistant Engineers, Mr. Ross, has it appeared from Mr. Bruce's letter (August 9th) "been of little use for a long time on account of fever;" and the Agent with much apparent reason objects, to his drawing during that time full tentage.

3. In the Government service a man might be suffering occasionally and working occasionally; and if compelled during that time to use his tents, would draw full tent allowance: but it would be well if the Railway Directors were requested to frame some rules regarding their Engineers being absent from their duty on account of sickness, the time for Medical treatment that might be allowed without forfeiture of any allowance, the circumstances under which Medical certificate should be called for, and the allowance to be drawn when absent from their duty upon such certificate.

4. In the meantime I have suggested to the Agent that the periodical reports from the Railway Medical Department should show, in the case of the Engineers, as well as the subordinate servants of the Company, the number of days each individual is under treatment and incapacitated for work.

CAMP PALMANAIR,
7th September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 206.

Extract from the Minutes of Consultation, dated 19*th September,* 1854.

Read the following observations of the Consulting Engineer on a report of progress from the Chief Railway Engineer.

(Here enter 7th September, 1854, No. 147.)

Para. 1. The Government consider the course proposed by the Consulting Engineer in Para. 3 of his observations to be the correct one. It appears to them that Tentage can only be refused to men, in the position of the Engineers, on its being shown that they were neither at work nor in the Medical List.

2. The Directors of the Railway Company will be called upon, through the Honorable Court, to frame rules for regulating the absence of their Engineers from duty on account of sickness, and the allowances to be drawn by them during such absence. In the meantime the Government approve the instructions communicated to the Agent, respecting the periodical Reports from the Railway Medical Department.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Coimbatore, 9*th September,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

Enclosed I send you the Fortnightly Reports up to August 31st.

2. Mr. Latham, you will observe, is in error regarding the time of the moonsoon, and its effect in retarding the progress of his work.

3. I have received some of Mr. Beattie's permanent Section, and I shall, with all expedition, prepare it for Government.

4. We this day began the Earthwork on District 13, and but for Mr. Ross's fever much more would have been done on District 13 and 14.

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

MADRAS RAILWAY, ENGINEER'S OFFICE,
Coimbatore, 1*st September,* 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In District 14, the coolies have cleared a further distance of one mile in the direction of the line North of the trunk road.

2. In District No. 13, I have set out nine miles permanently, of which (4) four miles are staked out and the Section taken.

3. With this I send Mr. Ross's report for this Fortnight; he is at present under Medical treatment, and is not able to attend to his duties.

I have, &c.,
(Signed) J. W. GALE,
Resident Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

COIMBATORE, *September* 1*st*, 1854.

MY DEAR SIR,

I have to report to you that from 15th to 22d of last month, I was engaged in staking out the line of Railway near the Village of Singanelloor, and that from the 22d to the end of the month I have been laid up with a return attack of the fever I caught when surveying in the Walliar Jungle.

Yours very truly,
(Signed) A. D. ROSS,
Assistant Engineer.

To J. W. GALE, ESQUIRE.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

MULLAPOORAM, 2*d September*, 1854.

DEAR SIR,

Since reporting to you the rains have been both frequent and heavy, and have caused some delay in both Districts No. 7, and 8. You will see from the enclosed report of Mr. Henderson, that the Panar river has prevented his commencing his staking out and sectioning from this end. You will see also his Madras Brick-makers have left him, which is a pity, as the Brick-makers of this District are of an inferior description generally.

2. On District No. 2, the section of the first 6½ miles has been completed, the levels will be checked immediately, the plan plotted, and will be forwarded to you at Coimbatore by about Friday next.

3. The cutting of the Jungle is going on but very slowly: although I have 120 Coolies employed, at this season it is both difficult to cut or burn.

4. I am sorry to have to report fever has again broken out and been more general than usual but mostly in a subdued form, unless in the case of European Sub-Inspector Noble who died this morning.

I remain, &c.,
(Signed) A. BEATTIE,
Resident Engineer.

To GEORGE B. BRUCE, ESQUIRE.

(True Copy.)
(Signed) G. B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

CULLAVY, 29*th August*, 1854.

MY DEAR SIR,

The late heavy and frequent rains have prevented my doing much since my last report, and my Brick-fields are entirely deserted. The Madras Brick-makers, &c. who were stationed at the crossing of the Panar river, which has been impassable for sixteen days, have left on the plea of bad health.

2. I am now proceeding with staking out the line from this neighbourhood, and Inspector Stanley is at work at his Bungalow near the Shamulputty road crossing.

I am, &c.
(Signed) W. HENDERSON.

To G. B. BRUCE, ESQUIRE.

(True Copy.).
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

II. DIVISION.

No. 4 *District.*

MADRAS RAILWAY, RESIDENT ENGINEER'S OFFICE,
Vellore, 26*th August*, 1854.

Report on the progrees of the Survey for the Fortnight, from 12*th to* 26*th August*, 1854.

1. The total length of survey completed up to this date is 14 miles, 22 chains, being an advance of 6 miles, 48 chains ; this brings the work up to a point South of Latary.

2. The total length of trial section completed up to the same date is 15 miles, 70 chains, being an advance of 3 miles, 63 chains ; this finishes to a point one mile and half West of Latary, and three miles and half from the crossing of the Palar river above Eringeepooram.

3. The progress of the levelling has not been so much as usual during the past fortnight owing to wet weather, and my being laid up for several days with a slight attack of fever, which also at the same time was prevalent among the coolies and lascars employed on the Survey.

4. I beg to enclose Mr. Latham's report of the work done by him on the Survey, No. 6 District.

(Signed) J. COLLINS,
Resident Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY COMPANY.

"FORTNIGHTLY REPORT."

REPORT 2.

To JAMES COLLINS, ESQUIRE,
Resident Engineer.

SIR,

In my last report, No. 1, I named to you that I was surveying two routes, to effect a desirable connexion with Mr. Henderson's District.

2. I have, since that report was forwarded, been following up from the B. M. left by Mr. Henderson North of the Muttoor river and Mookramputty, proceeding past Ramakistnaputty and Pauperaputty on the West; leaving Poodoor on the East, and passing Sheratoor and Konachy on the extreme West; at the point I approach very near the course followed by Mr. Tyrrell, and make up a junction with the first base line. I started Eastward of the junction of the two rivers.

3. I am now encamped about one and three quarter miles from Triptoor; and on my arrival at that place, I intend laying down the Survey and section as required by the Chief Engineer. This duty will, I think, occupy me during the N. E. monsoon.

4. Since my last report we have experienced heavy rains, and unfavorable weather.

I am, &c.,

CAMP NEAR TRIPTOOR,
24th August, 1854.

(Signed) G. LATHAM,
Assistant Engineer.

(True Copy.)

(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER,
For information, 15th September, 1854.

Submitted (with observations) for the information of Government.

CAMP PALMANAIR,
23d September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On letter from the Chief Engineer of the Madras Railway to the Agent, dated 9th Instant, forwarding reports of progress.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The work done in the Malabar Division (Mr. Gale) during the fortnight appears to have been four miles of line staked out and section taken. Other five miles "set out," one mile of jungle cleared. This is slow progress.

2. In the Salem division (Mr. Beattie) the progress is no better; six and a half miles of section taken in a fortnight; and cutting of jungle "going on but very slowly."

3. Mr. Collin's report (Vellore Division) is more satisfactory; six and a half miles of Survey having been made and nearly four miles of section taken though interrupted for several days by an attack of fever.

7. Mr. Bruce reports in this letter, that he has begun the Earthwork in District 13, that is near Coimbatore.

5. The decision of Government communicated in an Extract from Minutes of Consultation in the Financial (Railway) Department, No. 209 of the 19th Instant, renders the propriety of this proceeding doubtful.

See Ex. Min. of Cons. No. 51, dated 1st March, 1854.

6. If the line by Caroor recommended in Major Montgomerie's Memorandum were adopted, the main line would pass 20 or 30 miles to the South-West of Coimbatore; and the latter Station, as well as the Neilgherry Hills, would, according to that Gentleman's views, be accommodated by a branch,

The line, upon which Mr. Bruce has now begun the Earthwork is that portion of the main line (as originally proposed) which lies between Coimbatore and Paulghaut.

7. The intentions of the Board of Directors upon the subject are not very clear. Major Montgomerie's Memo. was forwarded in a letter from the Agent to the Chief Secretary, dated the 25th February last; the Board of Directors in a letter to the Honorable Court, No. 96, dated the 13th March say "while the construction of the line to Vaniembody is in progress, it is proposed, as stated in the Chairman's letter of the 15th August last, to proceed with the other end of the Railway from the Western coast towards Coimbatore, the materials for which will be shipped for that coast as tonnage can be obtained. The intervening portion between Vaniembady and Coimbatore will also be surveyed and marked out and the Construction of the Bridges commenced, some of which as that over the Cauvery River, are of large magnitude and will require at least two seasons for their completion."

Ex. from the Min. of Con. No. 168, dated 31st July 1854.

8. It would seem from this, that the once contemplated alteration in the direction of the main line was no longer thought of.

9. It is a question for the decision of Government whether the Agent shall proceed at once with the construction of the direct line from Coimbatore to Paulghaut; or shall confine the labour of his Engineers at present to surveying and staking out the line towards the Coast.

10. It is a question that differs thus much from that decided in a late order, that even supposing Major Montgomerie's line to be adopted, I am of opinion that instead of one branch from Coimbatore (and the Neilgherries,) there should be two: one direct to Paulghaut as now set out by Mr. Bruce, the other inclining towards the South and East to join the main line 20 or 25 miles West of Darapooram.

Ex. Min. Cons. No. 209, dated 19th September, 1854.

Camp Palmanair,
23d September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

Madras Railway, Chief Engineer's Office,
Shervaroy Hills, *23d August*, 1854.

From GEORGE B. BRUCE, Esquire,
Chief Engineer.

To EDWARD SMALLEY, Esquire,
Agent.

Sir,

I beg to hand you Fortnightly Reports, dated 15th August, received from Messrs. Beattie, Gale and Collins, Resident Engineers, and Messrs. Latham and Ross, Assistant Engineers.

I have, &c.
(Signed) G. B. BRUCE,
Chief Engineer.

Mullapooram, *15th August*, 1854.

Dear Sir,

Since reporting to you last the Engineer's Bungalow, a Sub-Inspector's House and a range of Cooly Huts have been completed on District No. 7. The Bandy track has

also been carried down to the Panar River, Mr. Henderson has also commenced laying off his line at Cullavy.

2. On District No. 8, the Engineer's Bungalow has been completed, as also one Inspector's Bungalow and two Sub-Inspector's Houses, the other Inspector's Bungalow will be roofed in a few days. Section No. 1, of this District (12½ miles) has been staked out, and I leave on Monday to lay off the line on Section No. 2, roughly so that the jungle may be cleared previously to laying off the permanent line.

3. I feel happy in being able to report that I think I will be able to get Contractors for the soft Earthwork here, on the conditions that I allow them a fortnights trial, which I have consented to do. The Rock cuttings are very heavy, and there will be more difficulty in finding Contractors for them.

4. On several parts of the line Cooly huts will have to be erected principally at the Rock cuttings in Moroor Ghaut, these I shall endeavor to get erected by contract immediately.

I remain, &c.,

(Signed) A. BEATTIE,

Resident Engineer, Shervaroy Division.

G. B. BRUCE, Esquire.

(True Copy.)

(Signed) G. B. BRUCE,

Chief Engineer.

Madras Railway, Resident Engineer's Office,

Vellore, 15*th August*, 1854.

2d Division.

No. 4 District.

Report on the Progress of the Survey from the 31*st July to* 12*th August*, 1854.

The trial length of Survey completed is 7 miles, 54 chains, being an advance of 3 miles, 17 chains during the fortnight. This brings the work up to Cautpaudy, a village about half a mile East of the road between Chittoor and Vellore.

2. The total length of trial section completed is 12 miles, 7 chains, being an advance of six miles during the fortnight. This brings the work to a point half a mile west of the village of Vadoovencootah, or within two miles of Latary. For one mile further on, the line has been staked out.

3. After passing the Chittoor road there are several large tanks and cultivated lands watered by them, above and below the Railway, but not intersected by it.

4. The weather has not been favorable to our operations. Strong winds continued to prevail to such an extent at times that the work had to be given up.

5. There remains now about seven miles of section to be completed in order to reach the proposed crossing of the Palaur river which I hope to reach in a week or ten days. I am still deprived of the assistance of Mr. Fenwick, who is as yet suffering from the effects of the accident he received about a month ago.

(Signed) JAMES COLLINS,

Resident Engineer.

(True Copy.)

(Signed) G. B. BRUCE,

Chief Engineer.

MADRAS RAILWAY COMPANY, DISTRICT No. 6.

To JAMES COLLINS, ESQUIRE,
Resident Engineer, Vellore.

REPORT No. 1.

SIR,

I beg to forward you my first report of my operations in the survey and sectioning of my District No. 6.

2. After having received the plan and section from Mr. Bruce, and examined the country with it, I found it impossible to commence at the point laid down on the plan in consequence of Mr. Henderson's line being nearly two miles further down the river; we therefore accordingly agreed to try two routes for affecting a desirable junction of gradients. I then fixed a B M at the eastern side of the junction of the Muttoor and Paupcraputty rivers and proceeded northwards past Authaly, Urrasamurroor, Beemputty crossing the tank and passing the village of Pauperaputty, also Paumundroor, Poodoor, Shevatoor, Konachy and Mootoor, the whole distance being about 6½ miles. This route causes only one Bridge to be erected over the Muttoor river, further south of the junction from which I started.

2. I am now employed taking the survey and section of this route, following up the original B M, left by Mr. Henderson, and proceeding northwards Ramakistnahputty and Kotapuddy. I shall therefore effect a junction with my other survey somewhere near Konachy, and at that point I arrive at the line followed by Mr. Tyrrell in his survey on to Tripatore. This line will however incur the necessity of two Bridges, one near the Pauperaputty and the other near the Muttoor river.

3. The high growing crops and heavy rains of late have in some measure retarded my operations of the survey.

I am, &c.,

CAMP KOTAPUDDY, 14th *August*, 1854.

(Signed) GEORGE LATHAM,
Assistant Engineer.

(True Copy.)

(Signed) GEORGE B. BRUCE,
Chief Engineer.

COIMBATORE, 15*th August*, 1854.

GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

The coolies engaged in the Walliar Jungle have cleared a further distance of one and a half mile since the 1st instant. The rain continues to fall with hardly any intermission, and as it is physically impossible to level under these circumstances I have not made the attempt.

2. I rode into Coimbatore yesterday and this day have joined Mr. Ross in making the permanent section of the 1st eight miles in his District. With this I beg to forward a report from him of his progress since the 1st Instant.

I have, &c.,

(Signed) J. W. GALE,
Resident Engineer, 14*th District.*
Malabar Division.

(True Copy.)

(Signed) G. B. BRUCE,
Chief Engineer.

COIMBATORE, *15th August*, 1854.

FROM A. D. ROSS, ESQUIRE,
Assistant Engineer, Madras Railway, District No. 13.

To J. W. GALE, ESQUIRE,
Resident Engineer, Malabar Division.

SIR,

I have to report to you, that on Mr. Darling coming to me for the purpose of commencing his duties as Inspector, I at once showed him the situation on which he was to build his own and one of Sub-Inspector's Bungalows.

2. These Bungalows as well as one at Nunjundapooram are now being proceeded with as quickly as possible. During the last fortnight I also set out the first two miles of the Railway near Shinganelloor, which however you have now altered.

I have, &c.,
(Signed) A. D. ROSS,
Assistant Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER,
For information, 29th August, 1854.

Submitted (with observations) for the information of Government.

CAMP PALMANAIR,
23d September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On letter from the Chief Engineer of the Madras Railway, dated the 23d August, to the Agent of the Madras Railway Company.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent forwards copies of these documents without observation. I regret that I cannot report more favorably of the progress made on the "Shervaroy" and "Malabar" Division.

2. In the former, the Agent was authorized by letter, dated the 29th May, on a section received from the Chief Engineer, to stake out the Moroor Ghaut, being part of District 8.

3. On the 15th August, Mr. Beattie, reports that Section No. 1 of this District, 12½ miles, has been staked out, a very small amount of work to have accomplished in 2½ months. Attention appears to have been directed according to these reports chiefly to the Engineer's and Inspector's Bungalows, by no means an important part of the work, nor in any degree essential to the execution of the rest, all the Engineers and Inspectors being supplied with Tents.

4. The progress of the survey in District 4, under Mr. Collins, appears steady and satisfactory.

5. The amount of work done by Mr. Gale, and his Assistant Mr. Ross, during the fortnight is very small indeed. The latter is reported to have suffered much from sickness, which may account for his having been occupied a fortnight in setting out two miles of Railway. I trust the effect of the remarks which have lately been made by Government upon this subject, and the presence of the Chief Engineer at Coimbatore will lead to a more satisfactory state of things.

CAMP PALMANAIR,
23d September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 224.

Extract from the Minutes of Consultation, dated 25th October, 1854.

Read the following observations of the Consulting Engineer on Fortnightly Reports of Assistant Engineers.

(Here enter 23rd September, 1854.)

Excepting the survey in District No. 4 carried on by Mr. Collins, the Right Honorable the Governor in Council considers the work lately performed by the other Railway Engineers to be very small, and he desires that Lieutenant Colonel Pears, in communicating the dissatisfaction of Government at this slow progress, will require a decided opinion from the Agent and Chief Railway Engineer whether the work is satisfactory or not to them.

2. The Engineers of the Railway Company appear, up to the present time, to have been occupied chiefly in providing for their own accommodation, which, as justly observed by Lieut. Col. Pears, is by no means an important part of the work, since they are all, as well as the Inspectors, supplied with Tents. It is now hoped that they will be in a position to make more rapid progress in the woik they were sent out to perform.

3. With reference to the question submitted for the decision of Government in Para. 9 of the Consulting Engineer's remarks, the Governor in Council is of opinion that the chief working strength of the Engineer Establishment should be concentrated on the line from Madras to Vaniembady, which the Railway Company are desirous of having completed and that work should be also pressed on from the other coast inland, by thus proceeding the means of transit for meterials sent out from England will be secured from both the Madras and Western Coast, and thus facilitate the progress hereafter of the work in the intermediate inland divisions. The Consulting Engineer will confer with the Agent and Chief Railway Engineer on this point, and report what arrangements they would recommend for a distribution of the present Establishment, so that in carrying out these objects the works may be more rapidly and vigorously performed at the two extremities; while the work of the intermediate divisions, though receiving less attention, may still make some progress,

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary,

To LIEUT. COL. T. T. PEARS, C. B.
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
3d *October*, 1854.

No. 320.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to an Extract from the Minutes of Consultation, dated 8th ultimo, No. 198, in which the Government express their dissatisfaction with the progress of the works in certain Districts, I have the honor to submit for the information of the Right Honorable the Governor in Council, the accompanying copies of a letter addressed by me to the Chief Engineer and his reply, dated respectively the 18th and 25th September 1854.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

MADRAS, 31st *October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
18th *September*, 1854.

No. 361.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. In forwarding the accompanying copy of Extract from the Minutes of Consultation of the Government, I have to request that you will give your opinion of the manner in which each Assistant Engineer is carrying on the work of the District entrusted to his care, and report the cause where any delay has appeared.

2. Districts Nos. 1 and 2 are, I suppose, not alluded to in the present remarks of Government.

3. The reports of Messrs. Collins, Henderson and Latham, are very satisfactory, so far as I am able to judge.

4. The unfortunate accident, which Mr. Fenwick met with, sufficiently accounts for the delay in his District.

5. Judging from the returns, for I have no Fortnightly Reports, although I have twice requested them, I consider the work of the 3d District such as displays great want of attention and energy. From 1st of January to the 31st July, a period during which there was no interruption to work, a very small amount has been performed. From March to July both inclusive the amount of Earthwork executed only reached cubic yards 57,653, although the season was favorable for obtaining labourers. In your remarks for District No. 3, in the month of April, you stated that "there was a

very strong desire manifested by the people living in villages near, to be employed in the works," and that you anticipated rapid progress. I cannot but think that Mr. McMaster has shown himself unqualified for the charge of a District.

6. The Reports of Messrs. Beattie, Gale and Ross do not evince much zeal or progress. Mr. Ross has, I believe, been much interrupted by bad health, but this and any other sufficient cause for delay should be clearly explained for the information of Government.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 25th September, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I have the honor to acknowledge the receipt of your letter, No. 361, with the Minute of Consultation, dated 8th September.

2. I do not exactly know what progress reports are referred to, as no date is given. I conclude, however, that the reference is entirely to those Districts which are not under construction, but which are being examined and the line set out.

3. Mr. Collins at Vellore has progressed with his work very satisfactorily, and is examining the Palar River with great care to secure the best position for crossing it.

4. With the assistance of these surveys I hope to decide on this portion of the line with Col. Pears, in a few days.

5. Mr. Fenwick is not able to resume his duties.

6. Mr. Latham has nearly completed the whole of his preliminary survey of District No. 6.

7. Mr. Henderson is staking out District 7. He has been a good deal hindered by the swollen state of the Rivers, but I am looking daily for a portion of his working section.

8. M. Beattie has finished his section of the North part of District 8, and is only prevented from finishing the whole by the tedious process of trying to improve the line through the Jungle down the Moroor Pass.

9. Of District 13 about eight miles have been staked out and the working section prepared: this has principally been done by Mr. Gale, Mr. Ross having been ill.

10. The work here has been commenced; and though there will be considerable difficulty at first in getting people, I succeeded in letting several parts of the work when in Coimbatore.

11. The whole distance from Coimbatore to Palghaut is though a most difficult country, and Mr. Gale has shown most praise-worthy perseverance and sound judgment

in the selection of a line which will, in the end, be much more for the interest of the undertaking than if he had hurried carelessly on, and gained by his expedition the praise of the Railway Company and the Government.

12. Mr. Gale is still working on District 13 and will continue to assist Mr. Ross there, until all important points have been decided, when Mr. Ross will complete his working section.

13. Besides this Mr. Gale is clearing a new line through the Walliah Jungle on District 13, this cannot be too carefully examined, and regarding it, I must beg both the Railway Company and the Government to exercise patience.

14. We could begin the work immediately at Palghaut, but we should not gain much by it; I defer this for a few weeks until the crops are off the ground. The line in the neighbourhood of Palghaut is through an easy country.

15. Regarding District 3, I beg to observe, that I do not think you are warranted in the severe remarks which you make regarding Mr. McMaster.

16. It is true the Earthwork was begun in March, but only for a small distance; had the whole been delayed until the complete section was ready, a very different amount of work would have been done in the same time.

17. I should also remark that the hot season is a very bad one for doing Earthwork.

18. The amount done during August was 29,150 cubic yards. This is not so much as I should like to see it, but I have no doubt it will increase every month.

19. Mr. McMaster put in the whole of the wells for the piers and inverts of the Poiney Bridge with 56 arches, in three months: so that even had he been slow in one thing, his chief work has not lagged behind.

20. The satisfaction which you very properly expressed regarding the progress on some Districts and the censure administered to others, in reality amounts to an injustice when you remember that in the one case there is level country involving little difficulty, and the only jungle is a stray Palmyrah tree, whereas in the latter case there are difficulties of every kind to contend with.

21. In conclusion, allow me to observe, with all deference to the Madras Government, that it is unreasonable to expect a marked and visible progress at each short interval, any more than you can discern day by day the growth of a tree.

22. Very few Minutes of Consultation since this Railway began have expressed satisfaction with our progress, and though I cannot meet the reproofs of Government by saying I have done all that I wished to have done, I dare brave (not week by week but taken as a whole since we began) comparison with any line in England or in India.

23. At this time last year there were only two Engineers with me in the country; now the first seventy miles are going on as fast towards completion as materials from England will allow, and before the end of the year the whole line to Salem will be in progress, and as much of the line from Coimbatore to the coast as the small number of Engineers will permit.

24. We have built our Bungalows, established our own Workshops, and done much which does not appear upon paper, but will not the less facilitate progress in the end.

25. Regarding the inquiry of Government as to what supervision I exercise over my Subordinates, I am at a loss to reply, inasmuch as I do not know what it means,

26. I am in Camp or at my Head Quarters as business calls me; the supervision of every Chief Engineer is necessarily by letter with all, except those Engineers with whom he may be at the time, and if it is any answer to the inquiry of Government, I may say that I write about two hundred and fifty letters a month which never meet your eye, and that I have no stone unturned to urge on the work, but I seldom send to the Engineers the periodical reproofs of Government inasmuch as I think they are tended to retard rather than facilitate progress.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 320, dated 3d October, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With reference to the order of Government in the Financial (Railway) Department, No. 198, of the 8th September, the Agent forwards copies of correspondence between the Chief Engineer of the Railway and himself on the subject of the progress made on certain portions of the Survey. The letter from the Chief Engineer to the Agent calls for some observations.

2. There have been two Engineers employed at the other end of the line near Coimbatore since last January. These gentlemen were occupied during a great portion of that month in riding with the Chief Engineer of the Railway and myself over the proposed line between Coimbatore and the coast: since that time their labours have been wholly confined to that portion of the line which lies between Coimbatore and Palghaut, a distance of about 30 miles. Of this Mr. Bruce speaks as "a most difficult country." I do not agree with him. In the determination of the general course of the line there is no difficulty. In laying down the line itself, the chief difficulty lies in the denseness of the jungle on some portion of it; a difficulty to be overcome, not so much by an expenditure of time on the part of Engineers, as by an expenditure of energy in collecting coolies and money in paying them.

3. Speaking of this portion of the line, Mr. Gale, the Resident Engineer, says, "the land along the course of the line up to this point, 14½ miles, is cultivated, and from Shinganellore to Nunjundapoorum it consists of Paddy-fields and Plantain or Cocoa-Topes; beyond Nunjundapoorum it is entirely dry cultivation. And again from the 14th to the 24th mile the course of the line lies through the Walliah jungle; and we learn from Mr. Bruce's letter now submitted, Para. 14, that "the line near Palghaut is through an easy country."

4. Thus the two Engineers had been employed, at the date of Mr. Bruce's letter, eight months upon a line of 30 miles, the only difficulty in which was found in 10 miles of jungle. The Earthwork near Coimbatore had just commenced, and eight miles of the line been staked out. One of the Engineers had been constantly laid up with fever, the other had been prevented from working on a portion of his division by the heavy rains; but this difficulty applied in a very slight degree to those first 14 miles of open country lying near Coimbatore. It appears then that much depended upon the expedition with which the jungle could be cleared where required; and I find that during the present year up to the end of July the total expenditure on District 14, on establishments including the Engineer's pay, had been,

Rs. 8,469, while the expenditure in labour and all Contingencies had been during the same time Rs. 920, and that during the month of July there were 700 coolies employed in clearing jungle, being little more than 20 a day.

5. Mr. Bruce speaks highly of the Resident Engineer's perseverance and sound judgment, and thinks it will be much more for the interest of the undertaking than if he had hurried carelessly, &c. But it is clear that jungle, is and has been quoted as, the difficulty, and the Engineer need not have dreaded a charge of hurrying carelessly the clearing of the jungle, if he had employed 200 coolies a day instead of 20.

6. It appears then that on the first 14 miles the country was open—the general course of the line obvious—the particular course easy of determination. The Chief Engineer has, by personal visit, imparted some energy to their proceedings and commenced work on this portion, though he reports (17th October) that the clearing the jungle (beyond) is still going on; so that it was not necessary to wait the completion of this clearance to begin work near Coimbatore.

7. I shall not occupy the time of Government with any further remarks upon this subject. I shall only add my conviction that if the Railway Directors, while they consider the work performed up to the present time, refer to the Fortnightly Reports as those of the 15th June, 1st and 15th July, and 1st of August 1854, they will require on the part of some of their servants a little more energy in the discharge of their duties if they wish to complete their undertaking within the time proposed. I need not remark on the progress of the survey on District 8 under Mr. Beattie. The Engineer here had the very great advantage derived from Mr. Tyrrell's preliminary surveys, and I consider the work both there and near Coimbatore to have been not what it should have been under men of energy and experience, and this Mr. Bruce admits in the 2d Para. of his letter to the Agent, dated 9th August.

8. Government will not fail to remark the concluding passage in Mr. Bruce's letter, "the periodical reproofs of Government are seldom sent on to the Engineers." Of the propriety of this, as a matter of discipline, it will be for the Railway Directors to judge. The justice of this course as concerns those whose professional conduct has been thus remarked upon, appears to me very questionable; neither do I entertain a doubt, but that to this may in some measure be attributed the little improvement, in the amount of work done, as shown in the several reports of progress. On one occasion however it appears the Chief Engineer did communicate the remarks of Government to the Engineer; and urged them to increased exertion. I cannot close these remarks without alluding to the 21st Para. of Mr. Bruce's letter and observing that if these Fortnightly Statements cannot show progress, they might at least show that the Engineers have been well occupied; and the Government can judge whether the nature of their employment has or has not promoted the ultimate advancement of the work.

MADRAS,
31*st October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 26th September, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to forward the usual Fortnightly Reports, with the exception of Mr. Latham's which I have only just discovered to be wanting.

Will be out in a day or two.
Agent's Office, 2d Oct.

It is not necessary that I should say anything regarding these, as in my letter of yesterday's date I entered fully into the subject. I regard the whole as satisfactory.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

CULLAVY, 14*th September*, 1854.

MY DEAR SIR,

I have about five miles of centre line staked out in my neighbourhood, but have done little since my last Report, as I am desirous of getting my workmen on continuously from either end of my District. With this view it is my intention to start for Mookrumputty in the end of this week, if the Panar should continue in its present impassable condition.

Inspector Stanley is at work at Oulnaikenputty, but has great difficulty in getting the required coolies.

Sub-Inspector Gibson has left his post for Madras on a trivial pretence and against my written instructions. I have therefore discharged him.

I am, &c.,
(Signed) W. HENDERSON,
Assistant Engineer, 7th District.

To ALEXANDER BEATTIE.

P. S.—I may mention that I have had a meeting with Mr. Latham, and have decided on our junction, which is all that could be desired both in line and in levels.

(Signed) W. H.

(True Copy.)
(Signed) G. B. BRUCE,
Chief Engineer.

COIMBATORE, 15*th September*, 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In District 14 the jungle has been cleared a further distance of two miles, 344 yards, the ground proves on examination to be, though very broken and rocky, more favorable than on the south side of the trunk road.

In District 13 the Earthwork has been commenced, 1 mile and 75 chains staked out and levelled, making a total distance of 5 miles and 75 chains from the commencement. With this I send Mr Ross's report of progress.

I have, &c.
(Signed) J. WALTER GALE,
Resident Engineer, 14th District,
Malabar Division.

(True Copy.)
(Signed) G. B. BRUCE,
Chief Engineer.

COIMBATORE, *September* 15*th*, 1854.

MY DEAR SIR,

During the last fortnight I have made but little progress in staking out the line as my time has been fully occupied in setting the Contractors fairly at work. The first turf was turned on the 9th September, and there are now five Contractors busily employed in raising the embankment across the Tank near the Village of Singanullore; six miles of permanent survey have also been completed.

I remain, &c.,
(Signed) A. D. ROSS,
Assistant Engineer, District No. 13.

(True Copy.)
(Signed) G. B. BRUCE,
Chief Engineer.

To W. J. GALE, ESQUIRE,
Resident Engineer, Malabar Division.

MULLAPOORUM, 7*th September*, 1854.

MY DEAR SIR,

Since reporting to you last, the checking of the first 6½ miles has been completed, the sections finished and sent for your approval; other four miles have also been completed, and a tracing was despatched yesterday for your approval, the remaining portion of Section No. 1 (12½ miles) will be submitted to you at an early date.

The cutting of the Jungle on Section 2 is proceeding; but at this season it is a very tedious job, as the thorny underwood will not burn on account of the rains, and the coolies find very great difficulty in cutting it.

I expected to commence the Earthwork to-day, but on account of a misunderstanding with a Contractor, it will be some days before I can commence. I find it impracticable to make bricks at this season, but have made arrangements for going on when the rains are over.

I enclose Mr. Henderson's report for District 7, you will see he is obliged to commence at the further end on account of the impassable condition of the Panar River.

I remain, &c.,
(Signed) A. BEATTIE,
Resident Engineer, Shervaroy Division.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer, Madras Railway.

MADRAS RAILWAY, 2D DIVISION.

No. 4 *District.*

RESIDENT ENGINEER'S OFFICE,
VELLORE, 9*th September*, 1854.

Report on the Progress of the Survey for the Fortnight ending 9th of September, 1854.

The operations of the survey on this Division have been continued during the last fortnight along the two proposed lines. The one crossing the Palar above Erin-

geeverum and the other the Gooriattum River, and keeping on the North side of the Palar.

On the Eringeeverum line the trial levels have been taken across the river Palar towards the Village of Eringadee. Though not shown on the Ordnance Map, the Palar a little above the Village of Eringadee divides itself in two channels forming an Island opposite Eringeeverum highly cultivated and irrigated. The proposed line therefore must necessarily cross two river channels and several deep irrigation cuts, if carried in this direction.

The united widths of the river channels which are crossed by the line, nearly at right angles, amount to 27 chains. The surveying of this portion is still in progress.

In consequence of the various obstacles met with in carrying the line cross the Palar in this direction, I thought it best to push on with the levels and the examination of the ground on the North of the Palar, to see whether a more favorable line might not be obtained in that direction. The levelling of the line has been carried as far as Vidinangcoopum, where I am now encamped.

This line passes close to the village of Vidinangcoopum and about 8 or 10 chains North of the Kavinoor Tank, from whence it curves South and crosses the Gooriattum River a considerable distance between the village.

The levelling of the ground between this and the Gooriattum river, seven miles, will be completed by the end of the week.

The weather appears to be breaking fast, as the period for the commencement of the N. E. monsoon approaches. Heavy falls of rain frequently take place by day as well as at night; it is therefore, I think, most important that all of our attention should be directed to the completion of the field work so far as is necessary, to determine the important points as to the direction of the line through these Districts, before the weather quite puts a stop to out-door operations.

The total length of survey completed up to this date is 16 miles, 43 chains, being an advance of 2 miles, 21 chains.

The total length of trial section completed up to the same date is 24 miles, 13 chains, being an advance of 8 miles, 23 chains, bringing the work done upon the one line up to the southern side of the Palar, and on the other up to the Village Vidinangcoopum.

Progress made in the plotting of the survey is from Trivellum to the Village of Permarum, a length of 6 miles, 28 chains.

(Signed) JAMES COLLINS,
Resident Engineer.

(True Copy.)

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER,
For information, 2d October, 1854.

Submitted (with observations) for the information of Government.

CAMP CARADICOOPPUM,
14th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On Report of Progress forwarded with a letter from the Chief Engineer of the Railway, to the Agent, dated the 26th September, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Chief Engineer regards the whole of these reports as satisfactory. I cannot concur in this view of them.

It may be however that the whole of the work performed by the Engineers, though known to Mr. Bruce, is not shown here.

Mr. Henderson (7th District) has done little since the last report, being desirous of making some arrangements regarding the workmen, for which purpose he was about to start for Mookrumputty at the end of the week in which he wrote.

Mr. Gale (District 14) has had a further distance of 2 miles and 341 yards of jungle cleared.

In District 13, 1 mile and 75 chains has been staked out, but it is satisfactory to observe that the earthworks are commenced in this District. Mr. Beattie's report, District 8, is not very encouraging.

The survey of the 4th and 5th Districts by Mr. Collins is proceeding steadily and satisfactorily. Mr. Fenwick the Assistant Engineer in one of these Districts is still disabled from the effect of a fall.

A correspondence between the Agent and Chief Engineer with reference to the orders of Government in the Financial Railway Department, No. 198, of the 8th September, has been lately received and will be submitted in a few days.

CAMP CARADICOOPPUM,
14th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 17th October, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

TO EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In handing the Reports of the various Engineers, I beg to make the following remarks.

2. Mr. Collins is progressing steadily and has already all the plans ready for District 4, which I hope to submit to you shortly.

3. Mr. Fenwick is still unable to do out-door work, but for this the whole of the preliminary surveys and sections of the three Districts comprising the Vaniambady Division would have been ready.

4. Mr. Latham has completed the whole of District 6, and he will now work forward to meet Mr. Collins on District 5.

5. You are aware of the reasons which prevented my meeting Colonel Pears at Policondah last week, but I had the opportunity of examining on the ground the plans of District 6; the line is a very favorable one, and I hope the supply of labour for its execution will be considerable.

6. I cannot speak so favorably, as I could wish, of the progress on District 7, which I visited last week, the measures which I have taken, however, will, I hope, ensure better progress in future.

7. Mr. Beattie has finished the staking out and permanent section of the first 12½ miles of District 8, which, with the Estimate, I hope soon to submit to you. The only thing which prevents the whole from being completed is the tedious process of clearing a satisfactory line through the jungle; this is however going on as well as possible.

8. Whilst there last week, I made several arrangements regarding contracts, which I hope will turn out favorable; and I am inclined to think that, except in the case of skilled labour, our difficulties regarding labour on District 8, will not be so great as we anticipated.

9. Mr. Gale and Mr. Ross were engaged with me a great part of the time included in their reports which necessarily left them little time for actual field work; and Mr. Ross has been a good deal occupied with the arrangements necessary in commencing his works.

10. I have instructed him, however, to make the completion of his section his first work; that the plans may be prepared for submission.

11. Mr. Gale, who has generally enjoyed good health, has been laid up. The clearing of the Walliar Jungle still progresses.

12. I wish the Board of Directors could be prevailed on to send us out Engineers somewhat in proportion to the magnitude of the work undertaken.

13. We are short-handed at any rate; and when one Engineer is sick I cannot by any means supply his place.

14. The survey down to the Malabar Coast is to be gone on with; but I have no one to send but Mr. Paton, and I cannot well spare him out of my office. I have no one to send to make the survey, necessary to decide the position of the Cauvery Bridge, which ought to be decided and begun in January.

15. I am quite sure I have not miscalculated the number of Engineers required; or if I have, I asked for too few; and we cannot give satisfaction to the Government or to the public with a similar establishment.

16. On beginning the extended survey, I appointed the Engineers who did come to the most difficult parts, knowing that they must occupy the longest time. The progress was necessarily slow, but had we been able also to occupy the less difficult portions the average results would have been very different.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

MADRAS RAILWAY, No. 4 AND 5 DISTRICTS.

RESIDENT ENGINEER'S OFFICE,
VELLORE, 23*d September*, 1854.

2d Division.

Report on the progress of the work for the Fortnight ending 23d September 1854.

1. The surveying operations during the last fortnight extend 4 miles, 52 chains into No. 5 District.

2. The survey of the proposed line across the Palar, above Eringeeveram, has been completed to the south side of the main branch of the River.

3. The section of which portion was completed the fortnight before.

4. The survey and section of the alternative line north of the Palar have been extended. The former up to Pushmalatoor, the latter to a point one mile west of the Village Allatoor. The line has been further marked out as far as Yellitoor. The line crosses the Goriattum. This River is also divided into two Channels, the united width of which, at the crossing of the proposed line, amounts to 10 chains, 72 links.

Progress made.

1. Total length of survey completed up to this date, 26 miles, 68 chains, being an advance during the fortnight of 10 miles, 20 chains.

2. Total length of trial section completed 33 miles, 26 chains, being an advance of 9 miles, 13 chains.

3. Total length of survey plotted, 13 miles, 19 chains, advance 7 miles, 71 chains.

4. I beg to enclose two Reports received from Mr. Latham of his operations upon No. 6 District.

(Signed) JAMES COLLINS,
Resident Engineer.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

FORTNIGHTLY REPORT.

MADRAS RAILWAY COMPANY, REPORT No. 3.

To JAMES COLLINS, ESQUIRE,
Resident Engineer, Vellore.

SIR,

In my last report I stated that my camp was stationed one mile and a half from Tripatoor; since that time I have conducted my operations into Tripatoor, and proceeded northward 4½ miles.

2. I stayed in Tripatoor a short time to prove my previous work, and arrange with Mr. Henderson the junction of the two lines of Districts No. 6 and 7.

3. After getting my camp in order, I intend moving forward to complete the trail survey and section before the commencement of the monsoons.

I am, &c.,
(Signed) GEORGE LATHAM,
Assistant Engineer, District 6.

TRIPATOOR,
7th September, 1854.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

FORTNIGHTLY REPORT.

MADRAS RAILWAY COMPANY, REPORT No. 4.

CAMP CAVERYPUTT, *September 20th,* 1854.

To JAMES COLLINS, ESQUIRE,
Resident Engineer, Vellore.

SIR,

Having received your communication regarding my error of the commencement of

the monsoons, I immediately moved out my camp, and proceeded with the trial section and survey north of Tripatoor, Aunandumputty, Pooliarcooty, Packereemuttum, Mootoor Cuttaree, Seriumputty and Cauveryputt, the latter place being about six miles from Vaniembady, and eighteen miles from the commencement of my operations.

2. I now anticipate reaching the end of my District, viz., twenty-five miles, before the commencement of the monsoon (October 15th) at which time I shall present my plans from the junction of District 7, to one mile past Vaniembady.

3. The health of the whole camp has been highly satisfactory, and the Inhabitants of the District favorable to our operations.

I have, &c.,
(Signed) GEORGE LATHAM,
Assistant Engineer, District 6.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

FORTNIGHTLY REPORT.

CAMP MOROOR, 2*d October*, 1854.

G. B. BRUCE, ESQUIRE.

MY DEAR SIR,

Since reporting to you the levels of Section No. 1 have been completed and checked. The Section will be plotted and ready for inspection on Wednesday.

2. The Earthwork has been commenced near Mullapoo.am. I have not been able to get Earthwork Contractors as yet; but now that they can see what is required of them, I hope they will be induced to commence work.

3. The clearing jungle, on Section No. 2, is still proceeding slowly and tediously.

4. I am sorry that I have again to report that fever has been very prevalent here; however, I think, the rains of the last few days have checked it a little, and trust that the monsoon will drive it away altogether; otherwise I am afraid great difficulty will be experienced in obtaining skilled labourers.

5. You will see, from the enclosed report of the Assistant Engineer of Section No. 7, that little has been done on account of his indisposition.

I remain, &c.,
(Signed) A. BEATTIE,
Resident Engineer, Shervaroy Division.

(True Copy.)
(Signed) G. B. B.
Chief Engineer.

FORTNIGHTLY REPORT.

CAMP GOONUMPUTTY, 28*th August*, 1854.

DEAR SIR,

In pursuance of my intention mentioned in my last report, I have now begun the working Section from this end of my District.

2. From the weakness, consequent on a short indisposition, I have since camping here been confined to Tent for five days. This has thrown me back, but I have laid off about three miles and this morning commenced the Section from the junction with District No. 6.

3. Owing to the impossibility of getting Carpenters, I fear my Inspector will not have his house up for the rains. I have had several Carpenters sent me from Tripatoor, but they have invariably, after three or four days stay, gone even without their Tools.

4. The wood for his house has been on the ground since the middle of August, but very little of it is dressed.

I have, &c.,

(Signed) W. HENDERSON,

Assistant Engineer.

(True Copy.)

(Signed) G. B. B.

Chief Engineer.

FORTNIGHTLY REPORT.

Madras Railway Engineer's Office,
Coimbatore, 2d *October*, 1854.

From J. WALTER GALE, Esquire,
Resident Engineer.

To GEORGE B. BRUCE, Esquire,
Chief Engineer.

Sir,

Since the 15th ultimo in District 14, the jungle has been cleared a further distance of three miles, 897 yards, in the direction of the line; besides which several cross clearings have been made to ascertain the character of the ground on each side of the line.

2. In District 13, Mr. Ross's time has been occupied chiefly on the works now in progress: his report I send with this.

3. During last fortnight I have been too unwell to continue the permanent setting out of the line; and have to report myself still unable to resume out-door work.

I have, &c.,

(Signed) J. WALTER GALE,

Resident Engineer, Malabar Division.

(True Copy.)

(Signed) G. B. B.

Chief Engineer.

FORTNIGHTLY REPORT.

Coimbatore, 2d *December*, 1854.

My Dear Sir,

I beg to report to you that, during the last fortnight the Earthwork has steadily progressed, while I have made arrangements to begin Brick-making. About three miles of jungle have been cleared, and we have got a quantity of firewood ready for being carted to the Brick-kilns. One Inspector and two Sub-Inspectors' Bungalows are being proceeded with. I have staked out permanently about two miles more than were done up to the 15th September.

2. The survey has been completed up to the 12th mile.

Yours very truly,

(Signed) A. D. ROSS,

District No. 13.

To J. W. GALE, Esquire,

Resident Engineer, Malabar Division.

(True Copy.)

(Signed) G. B. B.

Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

To the CONSULTING ENGINEER,

For information, 25th October, 1854.

Submitted (with observations) for the information of Government.

Madras, 31*st October,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,

Fort St. George.

On a letter, dated October 17th, from the Chief Engineer of the Railway to the Agent, Reporting Progress of Survey, &c.

Observations by the Consulting Engineer.

I regret that I cannot yet speak of these reports as satisfactory. I believe, however, that the Chief Engineer has, by his late visit, to the several portions of the line imparted something of energy to their proceedings, and I hope the rate of progress will improve.

Mr. Bruce explains the reason of Messrs. Gale and Ross' surveying work not having been so much, as it would have been, under other circumstances.

I have frequently had occasion to observe that the progress in these preliminary operations was not so good as might have been reasonably expected. Mr. Bruce now reports that Mr. Beattie (District 8) has finished the staking out, and permanent Section of the first 12½ miles of his District.

The Chief Engineer requested authority for doing this in a letter dated the 16th May last, which authority was given in a letter to the Agent dated the 29th May.

The observations which have been lately made by Government upon these progress reports will, I doubt not, be attended with a beneficial effect.

Madras, 31*st October,* 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,

Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 241.

Extract from the Minutes of Consultation, dated 21st November, 1854.

Read the following observations of the Consulting Engineer on letters from the Agent of the Railway Company.

(Here enter 14th and 31st October, 1854.)

It is quite evident, from the foregoing correspondence, and the observations of the Consulting Engineer, on the reports of progress forwarded by the Chief Railway Engineer, that there has been a lamentable want of energy, as well as of arrangement, in carrying forward the Railway works, and the Right Honorable the Governor in Council feels that it is most unsatisfactory for the Government, under the present circumstances, and conditions, to control the proceedings of the Railway officers. He desires that these sentiments, together with Lieutenant Colonel Pears' remarks, be communicated to the Agent of the Railway Company, and that the correspondence be brought to the notice of the Honorable the Court of Directors by the next Mail.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, October 25th, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Reports from Districts 4, 5, 6, 7, 8, 13 and 14.

2. These are upon the whole satisfactory; and I need not add any thing at present to my letter of the 16th Instant.

3. Mr. Henderson's report refers to some additional trials I desired him to make to secure a favorable crossing of the Panar River.

4. The permanent Sections and plans of Districts 8 and 13 are being prepared in my Office.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT, 2D DIVISION.

MADRAS RAILWAY, NO. 4 AND 5 DISTRICTS.

RESIDENT ENGINEER'S OFFICE,
VELLORE, *7th October,* 1854.

Report on the Progress of the Survey for the Fortnight ending 7th October, 1854.

1. The survey has been advanced on the line North of the Palaur from Push-

malatoor to the Western bank of the Goriattum River, being a distance of three miles, thirty chains.

2. The whole of the survey and trial Sections completed have been plotted, being a total length, from the commencement, of thirty miles, thirteen chains of survey, and thirty-three miles, twenty-six chains of Section.

3. By reference to the accompanying report from Mr. Latham, it appears the survey of No. 6 District has been completed, and that he is now engaged in drawing the plans and Sections of the line.

(Signed) J. COLLINS,
Resident Engineer.

To G. B. BRUCE, Esquire.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

Madras Railway Company, Report No. 5.

To JAMES COLLINS, Esquire,
Resident Engineer, Vellore.

Sir,

1. From Cauveryputt (at which place I was encamped when my last report was forwarded to you) I have proceeded onward seven miles to the end of my District, passing the villages of Kitandaputty, Cautandacoopum, Chinna Mootoor, Poodoor, Kilpully, crossing the river Godaar west of the latter village, and proceeded alongside the old road from Bangalore approaching the Eastern bank of the Palar River, going through Gointheepoorum a town on the Eastern bank and forward past Canderaputty. At about sixty chains beyond the latter village I conclude the 25 miles, constituting District No. 6, at which place is fixed a 25-0 feet Bamboo surmounted by a Red and White Flag situated south of the road to Amboor and the village of Valayapatoe and about 40 chains east of the River bank.

2. I am now occupied drawing out the necessary plans of trial section and survey.

I am, &c.,
(Signed) G. LATHAM,
Assistant Engineer, District 6.

Camp Triptoor,
October 8*th*, 1854.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

District 7.

Camp Koratoor, 12*th October*, 1854.

My Dear Sir,

Immediately after your departure from Cullavy I proceeded hither and have sectioned the proposed Koratoor deviation as desired by Mr. Bruce.

2. The section shall be forwaded as soon as I have attained M. Latham's levels at our junction on this deviation.

3. In the meantime roughly the apparent results.

4. The crossing of the river *bed* on the straight line drawn by Mr. Bruce is thirteen chains in length and on a skew of 70′ 0′. By bending the line about six chains further to the East, a crossing of the bed would be obtained seven chains in length and a skew of 43°.

5. This in addition to greater Earthwork and a drop in the levels of some 30 feet would appear to give a decided advantage to the line first laid down by Mookrumputty in which the crossings are about two chains each and nearly on the square.

* * * * *
* * * * *

I am,

Yours very truly,

ALEX. BEATTIE, Esquire,

(Signed) W. HENDERSON.

(True Copy.)

(Signed) GEORGE B. BRUCE,

Chief Engineer.

FORTNIGHTLY REPORT.

Mullapooram, 16*th October*, 1854.

Dear Sir,

Since reporting to you last the sections of the first 12½ miles have been plotted and completed; since then I have been engaged going over the line with you as far as Cullavy. After returning from thence my time has been devoted to getting the works set agoing and am happy to say that the Earthwork is progressing as well as could be expected. As we have had no rain here yet, coolies are by no means scarce, but I find very great difficulty in getting Contractors, as such a thing was never heard of here, this is a pity as the contractors I find get much more work from the coolies than I do. I am getting materials collected for my Bridges, but in this I am not getting on so fast as I could wish.

2. The cutting jungle on the 2d Section is still going on at a provokingly slow rate; only four miles have as yet been wholly cleared. I understand the Indigo crops are now secured, and am in hopes of getting an increase in the number of coolies. I intend going over this section to-morrow and hope to find means of getting on faster. I hope you will see the difficulty we had to encounter in getting the first survey and section made here.

3. I am getting a number of cooly huts built; I find that a very considerable number will be required as there is no accommodation to be had in the two or three small villages on this section.

4. I enclose Mr. Henderson's report. I am sorry that he has not been getting on so well as I wished; but I have written to him urging him forward, and to get a commencement of his works. I think he will not have much difficulty in finding coolies, as it is both populous and free from jungle.

5. I have ordered Mr. Henderson to make experiments on the granite near the crossing of the Panar River; it seems good, similar to Aberdeen granite, with perhaps less quartz in it.

6. Since writing the above I have been endeavouring to make arrangements to

pay the coolies by the quantity of work they perform: this, although not so satisfactory as having one responsible Contractor, I think will be more satisfactory and more economical than working by daily hire.

I am, &c.,

(Signed) ALEX. BEATTIE,

Resident Engineer, Shervaroy Division.

G. B. BRUCE, Esquire.

(True Copy.)

(Signed) GEORGE B. BRUCE,

Chief Engineer.

FORTNIGHTLY REPORT.

Coimbatore, 16*th October*, 1854.

My Dear Sir,

During the last fortnight I have partly set out a mile of line over the summit, which will, I think, do away with the deep cutting shown on the section as at present plotted. The jungle clearing is going on well; up to the present time four miles in length by 100 yards in breadth have been cleared.

Yours very truly,

(Signed) A. D. ROSS,

Assistant Engineer, District No. 13.

(True Copy.)

(Signed) GEORGE B. BRUCE,

Chief Engineer.

FORTNIGHTLY REPORT.

Madras Railway Engineer's Office,

Coimbatore, 16*th October*, 1854.

From J. W. GALE, Esquire,

Resident Engineer.

To GEORGE B. BRUCE, Esquire,

Chief Engineer.

Sir,

In District 14, I have to report that the cutting through the jungle on the line north of the trunk road is now completed, the distance cut exclusive of deviations and cross sections during the past fortnight is 704 yards. In addition to this a considerable distance of the clearing between Conjeegoda (chuttrum) and Palghaut has been widened for the permanent Survey.

2. With reference to the progress in District 13, I beg to refer to Mr. Ross' Report* which accompanies this; for since my last report, acting under the orders of the Surgeon in charge of this District, I have not taken part in any out-down work. I

hope now that my health is sufficiently re-established to permit of my resuming the permanent setting out of the line.

I have, &c.,

(Signed) J. W. GALE,

Resident Engineer, Malabar Division.

(True Copy.)

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

To the CONSULTING ENGINEER,

For information, 1st November, 1854.

Submitted (with observations) for the information of Government.

MADRAS,
22d November, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

On Fortnightly Reports of Progress contained in a letter from the Chief Engineer of the Madras Railway to the Agent, dated the 25th October, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The tone of these reports especially that by Mr. Beattie is not very encouraging. The Chief Engineer considers them "upon the whole very satisfactory."

Mr. Collins in District 4 had carried forward his survey nearly 3½ miles and completed the plotting of his whole work, thirty miles of survey and thirty-three of section.

Mr. Latham (District 6) had completed the trial Section of his District.

The country in this part of the line is easy to work over. These Gentlemen are new to the country, and people, and the progress of their work appears to have been steady and fair.

The Report does not show the amount of work done on District 7. The Engineer, Mr. Henderson, appears to have been making trials on some alternative line or lines; and his immediate superior Mr. Beattie regrets that Mr. Henderson has not been getting on so well as he wished.

Mr. Beattie does not speak in very sanguine terms of his own work; but I believe labour is becoming plentiful, and I cannot doubt, but with the assistance of two active Inspectors, the progress of his District will become ere long more satisfactory.

We cannot gather from the report from Coimbatore that Mr. Ross had been able to do much work during the fortnight, and Mr. Gale, the Resident Engineer, appears to have been sick.

MADRAS,
22d November, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 14*th November*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer,

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand the Fortnightly Reports of Districts 4, 5, 6, 7, 8, 13 and 14.

Mr. Latham's is dated irregularly: he has doubtless had notice of this from Mr. Collins.

I have received the preliminary surveys, and sections of Districts 4 and 6, with the working section of six miles of District 7.

Mr. Gale and Mr. Ross have unfortunately both been ill.

Mr. Beattie's report refers entirely to construction; this being a matter of considerable difficulty and much interest, I have sent his report entire.

I have, &c.,

(Signed) GEORGE B. BRUCE,
Chief Engineer.

FORTNIGHTLY REPORT.

2D DIVISION.

No. 5 DISTRICT, RESIDENT ENGINEER'S OFFICE,
CAMP VALLATANACOOPUM, 1*st November* 1854.

Report on the Progress of the Survey up to the 31*st October*, 1854.

2. In the last report, October the 7th, there had been surveyed a total distance of 30 miles, 13 chains, which includes the length of the two lines from the Western Bank of the Poiney to the Goriattum River, and to the Western side of the Palaur above Veerinjeepoorum; of this length 45 chains belong to No. 5 District.

3. According to the same report there was completed a total length of trial sections along the same lines of 33 miles, 26 chains; of this two miles, 25 chains, belonging to No. 5 District.

4. The advance in the survey which was resumed on the 20th, in accordance with the letter of the Engineer in Chief of the 16th ultimo, has been five miles, 20 chains.

5. The advance in the trial section which was recommenced on the 25th, has been five miles, 58 chains, which brings the work up to a point within a mile and a half of Valatanacoopum, which is three miles north east of the Amboor River.

6. I beg to enclose a report of Mr. Latham, dated 23d ultimo, from which it will be seen that he will immediately commence the survey of the District No. 5 as soon as he has finished plotting the plan and section of his own District No. 6.

(Signed) JAMES COLLINS,
Resident Engineer.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer, Madras Railway.

FORTNIGHTLY REPORT.

MADRAS RAILWAY, REPORT No. 6.

To JAMES COLLINS, ESQUIRE,
Resident Engineer, Vellore.

SIR,

Since my last report was forwarded to you my camp has been stationed at Tripatoor and I have been engaged in plotting my survey and section of the whole District No. 6.

2. I have received the orders of the Engineer in Chief to proceed with the trial survey and section of District No. 5. I shall therefore immediately proceed with this duty at the conclusion of my present occupation.

I am, &c.,
(Signed) GEORGE LATHAM,
Assistant Engineer, District 6.

CAMP TRIPATOOR,
October 23d, 1854.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer, Madras Railway.

FORTNIGHTLY REPORT.

CAMP UDDUGNEEROUMPUTTY,
30th October, 1854.

DEAR SIR,

I finished the laying off, &c., of the first six miles of my District on Saturday last, and am about to proceed with the second portion whilst drawing out the Section of the part completed.

2. Inspector Stanley's Bungalow is roofed in, and he is now engaged clearing line and making road communication.

3. As the Tahsildar speaks of the Collector's order for taking the trees cut down, I shall be glad to learn the authorized steps for keeping possession.

I have, &c.,
(Signed) WILLIAM HENDERSON,
Assistant Engineer, District 7.

To ALEX. BEATTIE, ESQUIRE,
Resident Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer, Madras Railway.

FORTNIGHTLY REPORT.

MULLAPOORAM, *1st November,* 1854.

MY DEAR SIR,

Since reporting to you on the 16th Ultimo, I have been almost entirely engaged in getting my Earthwork commenced: in doing this I have had considerable difficulty, as the number of daily coolies increased to such an extent that I had not half the necessary superintendence and indeed I have not yet got sufficient either in number or qualification. I have only been able to get four Maistries who can read or write any native language; and they are only beginning to understand what they are doing, so

you will see of necessity I am obliged to give my whole time to the proper working of 1,500 coolies. I have already informed you of the unsatisfactory state of the cuttings and embankments, and am sorry to say the rains have not softened them so much as I expected.

2. You are aware of my difficulty in getting Contractors for my Earthwork.

3. I have only just been able to get a very small supply of Chunam, but I have sent to a distance and hope to be able to obtain Contractors for this. I could not do this work by day labour on account of the extensive superintendence in gathering limestone, &c.

4. The jungle clearing is getting on a little more favorably: a mile has been cleared during the past fortnight. The laying out of Section 2 will be commenced to-morrow, but for some weeks I will be obliged to give a considerable portion of my time to the work commenced.

5. I enclose Mr. Henderson's report for District 7, you will be glad to see some improvement in the laying off, &c. which has taken place. I have written to him fully, regarding the commencement of his work and have warned him to be prepared with a sufficient management and not be overflown with coolies as I have been.

I have, &c.,
(Signed) ALEX. BEATTIE,
Resident Engineer, Shervaroy Division.

To GEORGE B. BRUCE, Esquire,
Chief Engineer.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer, Madras Railway.

FORTNIGHTLY REPORT.

Coimbatore, 1*st November*, 1854.

My Dear Sir,

I have to report to you that during the last fortnight, I have according to your directions taken the cross sections at the summit, to enable you to determine the best line, and I have nearly completed those you wished me to take near Muddekerry.

2. The clearing of the jungle has been to a certain extent delayed by the rains, the coolies refusing to work.

Yours, &c.,
(Signed) A. D. ROSS,
Assistant Engineer, District No. 13.

To J. W. GALE, Esquire.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer, Madras Railway.

FORTNIGHTLY REPORTS.

Madras Railway Engineer's Office,
Palghaut, 1*st November*, 1854.

From J. W. GALE, Esquire,
Resident Engineer,

To GEORGE B. BRUCE, Esquire,
Chief Engineer.

Sir,

I have to report that during the last fortnight, in District 14, the clearing in

the Jungle has been widened to an average width of 44 yards for a distance of 600 yards.

2. In District 13 I have set out a distance of three miles of the line and Mr. Ross has taken 50 chains of cross sections; Mr. Ross' report is appended. Both Mr. Ross and myself have been under Medical treatment for the greater part of the last fortnight.

I have, &c.,

(Signed J. WALTER GALE,

Resident Engineer, Malabar Division.

(True Copy.)

(Signed) GEORGE B. BRUCE,

Chief Engineer, Madras Railway.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

To THE CONSULTING ENGINEER,

For information, 17th November, 1854.

Submitted for the information of Government with observations.

MADRAS, 22d *November,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On Fortnightly Reports of Progress, contained in a letter from the Chief Engineer to the Agent of the Madras Railway, dated the 14*th November,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

It appears from these Reports that the trial sections and surveys on Districts 4, 5 and 6, that is from Trivellum to a point some miles beyond Tripattoor are very near completion. When these shall have been submitted and approved they may commence work simultaneously in those three Districts.

Mr. Beattie has two European Inspectors under him and four maistries and the necessity of giving his whole time to the superintendence of 1,500 coolies is not very apparent.

Mr. Henderson (District 7) speaks of having laid off six miles of his District, not a very satisfactory result of so many months employment. I shall request the Agent to forward tracings of the survey and section as far as they have been yet prepared.

MADRAS, 22d *November,* 185 .

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 247.

Extract from the Minutes of Consultation, dated 28th November, 1854.

Read the following observations of the Consulting Engineer. Fortnightly Reports of Progress.

(Here enter 22d November, 1854, Nos. 270 and 271.)

The reports of progress forwarded with the Chief Railway Engineer's letters of the 25th October and 14th November continue of the same unsatisfactory character as those lately received. They will be forwarded to the Honorable Court with reference to the dispatch from this Government, dated 22d Instant, No. 18.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
29th November, 1854.

No. 389.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I beg to forward the last Fortnightly Reports together with a copy of the Chief Engineer's letter which accompanied them. Mr. Bruce has not made any remark respecting these reports, but it seems to me from the statements which are very brief, that the progress made in these Districts has been very little during the fortnight.

27th November, No. 8.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS,
5th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, *27th November,* 1854.

No. 8.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

TO EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you Fortnightly Reports, dated 14th and 16th November, received from Messrs. Gale, Beattie, Ross and Henderson.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

REPORT.

MULLAPOORAM, 16*th* *November*, 1854.

MY DEAR SIR,

Since reporting to you last we have experienced heavy and continued rains which delayed the work considerably, especially as some of the rivers has been impassable for days.

On the second section two miles have been laid off sectioned and checked, and is now being plotted, and I am in hopes that by the end of next week, I will be able to despatch four or five miles for your approval.

On the work little is doing as the coolies have been dispersed considerably by the rains, and many are engaged in reaping their raggy.

I annex copy of Mr. Henderson's report from which you will see that he also has been delayed by the rains, aggravated by indisposition. I have urged Mr. Paton who is here, to send off his section without delay, so that he may be enabled to break ground.

I am,
Your most obedient Servant,
(Signed) ALEX. BEATTIE,
Resident Engineer, Shervaroy Division.

G. B. BRUCE, ESQUIRE,
Chief Engineer, Madras.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

CULLAVY, 14*th* *November*, 1854.

DEAR SIR,

The line along the first section of my District has been laid off for some days and part of the section of the second part taken. I hoped to have had this section sent by this time, but have lost several days from wet weather and ill health.

Inspector Stanley is carrying on the clearing of the section and I am glad to state that he reports a considerable influx of coolies.

Inspector Nolan has been confined by fever all this month and is still unable to attend to his work.

I am,
Yours ever truly,
(Signed) W. HENDERSON.

ALEX. BEATTIE, ESQUIRE,
Resident Engineer, Madras Railway.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY ENGINEER'S OFFICE,
COIMBATORE, 16*th* *November*, 1854.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In District 14, the widening of the clearing in the Jungle has been carried on

during the last fortnight, and the coolies have also been employed in cutting and squaring a considerable quantity of the timber for the Workshops.

For the progress made in the survey of District 13, I beg to refer to Mr. Ross' report which I enclose.

I have, &c.,
(Signed) J. WALTER GALE,
Resident Engineer, Malabar Division.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

KOOCHEE, 16*th November*, 1854.

MY DEAR SIR,

I beg to report to you that during the last fortnight, I have finally staked out about two miles further as far as the Muddekary road, and that I have taken almost all the cross Section necessary to enable you to determine the line beyond.

The Surveyor has begun to carry on the survey as far as the line is staked out.

Yours, &c.
(Signed) A. D. ROSS.

W. GALE, ESQUIRE.

(True Copy.)
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

On a letter No. 389, *from the Agent of the Madras Railway Company, dated* 29*th November*, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

To the accompanying Fortnightly Reports, it is a satisfaction to me, that I can add, that a survey and trial section of 27 miles of the line, being the whole of District 4, and part of District 5, have been submitted; and that I have been enabled to authorize the setting out of that portion of the line. A trial section and survey of District 6, has also been received for consideration; and further trials called for, in consequence of its exhibiting less favorable section than that shown in Mr. Tyrrell's section over the same line of country.

MADRAS, 5*th December*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 41.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 77, of the 16th

Instant, forwarding account of Sleepers. I observe the amount of Rupees 1,625 credited to one of the Contractors for Sleepers. No previous sanction has been given to this expenditure; and no report from the Chief Engineer accompanied your Bill. I have to request therefore that on this occasion such report may be forwarded for the information of Government; and that in future materials of this nature received from Contractors may not be passed, or their value credited, without the sanction of Government. It appears to me that, of the Sleepers mentioned in the list which accompanied your letter, there are many descriptions of woods neither mentioned in the original advertisement, nor in the Contractor's tender.

I have, &c.,

MADRAS, 18*th March*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
21*st March*, 1854.

No. 86.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to acknowledge the receipt of your letter of the 18th Instant regarding the account of Sleepers for the month of January.

2. You remark that "no previous sanction has been given to this expenditure, and no report from the Chief Engineer accompanied my Bill.

3. In regard to the first point I beg to state that it was never ruled, that the value of the Sleepers delivered should not be paid without the previous sanction of Government, and that you did not object when a similar payment appeared in the account of the month of October. It is true, however, that these were not delivered by a Contractor: you will observe moreover by the specification of Sleepers approved of by Government, that it has been stipulated that the "Railway Company will pay for the Sleepers as they are delivered on such delivery being certified by their Engineer." Thus no condition exists on the part of the contract that no money shall be paid without the "previous sanction" of Government. In order to give encouragement to Contractors it seems very desirable to make prompt payments. Being allowed a certain sum on account of Sleepers, I took upon myself, upon the certificate of the Engineer, to pay the cost of the Sleepers delivered agreeably to the terms of the specification. I ought certainly to have stated, in the column of remarks, the date of the Sleepers being passed by the Engineer, such certificate being countersigned by Mr. Bruce. A copy of the certificate given (revised) is now herewith sent. You will perceive by this that 527 Sleepers were delivered and that 27 were rejected as bad. The original certificate was dated 13th January.

4. In reference to your request that "materials of this nature received from Contractors may not be passed or their value credited without the sanction of Government," I beg to say that this rule shall be observed in future. I only fear, in regard to contracts which were entered into previously, that the parties may think I am not observing the stipulation of the deed.

5. There have been some woods delivered which are not included in our list; but with reference to Para. 3, of the specification, I think that you will coincide with me, that it would not be wise to reject good timber approved of by the Engineer,

especially at this early period of our operations; when we are, with difficulty, collecting Sleepers, and when the whole affair of supplying them is a novelty.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS, 5*th April,* 1854.

(Signed) T. T. PEARS.
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On letters from the Agent of the Madras Railway Company, No. 77 *and* 86, *dated severally the* 16*th and* 21*st March,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent submits for sanction a Statement of sums expended during the month in the purchase of Sleepers amounting to Rupees 2,218-12-0.

2. The principal items are the salary and expenses of the Agent at Rangoon, of whose proceedings Mr. Smalley gives in this place no account. I have ascertained however that, after much difficulty, arising from the peculiar condition of the timber trade in Rangoon, since the war, that gentleman has succeeded in purchasing a supply of timber, for the conveyance of which to Madras he has already secured tonnage. The exact quantity thus secured is not stated.

3. The next item in this Statement is "Law Charges" incurred in the preparation of deed of contract. Mr. Smalley explains the causes of this expenditure (which I imagine should have fallen upon the Contractor) having been made on account of the Railway Company.

4. The last item is Rupees 1,625 for 500 Sleepers purchased. It was pointed out to the Agent that these should not have been purchased, and paid for, without the sanction of Government. That gentleman in his reply appears to consider the sanction of Government to a tender equivalent to its approval of the articles tendered. If this were once admitted, the object aimed at in the establishment of a system of supervision, on the part of Government, would be defeated.

No. 86, 21st March.

5. Mr. Smalley remarks that no objection was made when a similar payment appeared in the accounts of the month of October; to which it might be replied, in that case the Sleepers charged for had been frequently seen by myself, and their quality was well known. The Resident Engineer has in the present case admitted timber of 21 different descriptions, of which one is described under the very general appellation of jungle wood (Katoo) and attaches to 56 Sleepers.

6. Of these 21 descriptions,* 6 only were mentioned in the Company's printed specification, while three† only among them appeared in the Contractors own tender, which received the sanction of Government on the 13th September 1853.

* Viz., Marooty Marun, Vangay, Cadookoy, Selyoouchi, Vel Vangay, Teak.

† Viz., Vengay Marun, Cudookoy, Selyoonchi.

7. It is extremely difficult for any man, however practised, to judge, at sight, of the degree to which any bit of wood placed before him possesses the qualities essential to the character of a good and durable timber.

8. Here, the Engineers must experience peculiar difficulty, from their entire ignorance of the several woods presented to them; their best security therefore is to be found in the known characters of some few of the woods, as of those mentioned in the Railway Company's first specification.

9. There can be no objection to specimens of several kinds of promising looking woods being taken by way of experiment; but, with sanctioned tender before them, this assortment of unauthorized woods should not have been accepted without special permission. Not concurring in Mr. Smalley's apprehension regarding the delay in paying Contractors—a reference to this office only requiring a very few days, and the Contractor having been generally many months in fulfilling their part of the agreement—I have requested that in future no contract supplies be considered passed till this Office has had the opportunity of considering them.

MADRAS,
5th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 83.

Extract from the Minutes of Consultation, dated 11th April, 1854.

Read the following Report from the Consulting Engineer for Railways.

(Here enter 5th April, 1854.)

1. The Right Honorable the Governor in Council sanctions the expenses incurred in procuring Sleepers for the Madras Railway during the month of January last, amounting, as per statement furnished, to Rupees (2,218-12-0) two thousand two hundred and eighteen and Annas twelve; but, in future, payments will not be made to Contractors till the supplies have been passed by the Consulting Engineer.

2. The Government concur with the Consulting Engineer that, with the sanctioned tender before the Railway authorities, the assortment of *unauthorized* woods should not have been accepted by them without special permission.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
10th May, 1854.

No. 136.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to forward the accompanying copy of a statement of 1,000

Sleepers of the Ist class delivered by Contractor Aroonaghery Moodely, together with copy of a letter from Mr. Bruce, which accompanied it, and to observe that though most of the Sleepers are of different woods yet they appear to be good. As the exclusion of good kinds of wood would interfere with the large supply of Sleepers required for our works, I think it advisable to encourage, as far as possible, the supply of wood of sound descriptions.

6th May, 1854.

2. I therefore request you will obtain sanction for the payment of the stipulated price thereof, viz.: Rupees (3,250) three thousand two hundred and fifty, calculated at 3¼ Rs. each.

I have, &c.
(Signed) E. SMALLEY,
Agent.

MADRAS,
16th May, 1854.

Submitted (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 6th May, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you a receipt for one thousand Sleepers, delivered on District No. 2, by Aroonagherry Moodely.

2. You will observe that the most of them are of woods not named in the list: of these, as well as many in the list, little is known; but judging from the appearance of the timber, Mr. Wilson reports favorably.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 136, *dated 10th May*, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits a bill amounting to Rupees 3,250 for 1,000 Sleepers, delivered by a Contractor named Aroonagherry Moodely, and requests the sanction of Government to its payment.

2. This man's contract was for 6,000 Sleepers, and was submitted to Government with my report of the 1st November 1853. There were 18 descriptions of wood mentioned in his tender; of which 12 only were sanctioned by Government. Of the 1,000 Sleepers now supplied by this man 28* only are of kinds mentioned in the original advertisements or sanctioned by Government.

Extract Min. of Con. No. 153, dated 4th Nov. 1853.

* Kadookoy,........	21
Vangay, ...	1
Matha,........ ..	6
	28

3. The Resident Engineer considers the whole 1,000 to be good; and under these circumstances the agent recommends that they be accepted and paid for.

4. I regret that I cannot concur with Mr. Smalley in this instance. The question of supplying Sleepers for the Railway has been always looked upon, as an important and a difficult one.

5. The supply we shall require for the line now sanctioned may be estimated at nearly a million, or 3 millions, of cubic feet of wood. In attempting to obtain, through native agency, that large supply, we have difficulties to contend with, arising in part from the peculiar state of the country, the want of roads, ignorance of the best description of woods, and partly from the peculiar character and habits of the people.

6. We have to get the wood, and the better to do that, we have, as far as we can, to create a class of enterprizing men of business. I would not depart, therefore from important and fixed principles, for the purpose of picking up a few hundred Sleepers on occasions. We may be considerate to the Native Contractors, and even, indulgent, and yet be just. We may make all possible allowance for their difficulties, and yet refuse to permit them to impose upon us, or wilfully depart from their own stipulations.

7. The present seems to me a trick too common among the natives of this country, a deliberate attempt to evade the fulfilment of a contract. The acceptance of these woods would be, I conceive, an act of positive injustice to other members of the community; who might either have declined tendering, or have too rigidly calculated the costs, on the assumption that the Agent meant what he said, about confining himself to particular kinds of timber. Honest men may be struggling to fulfil, to the letter, their contract; while others, less scrupulous, step in; and hope to evade it by offering a totally different description of wood. Of these woods little is known. Appearances are often very deceptive; they are some guide, but the best security we have for the character of the woods, is in the experience of the natives themselves.

8. The Contractors were invited to tender any description of wood sending samples. That would have been the proper time to have determined, whether such would, or would not be accepted.

9. I would recommend that the Agent be prohibited from receiving any woods, but those which the Contractor undertook to supply. I have already called the attention of the Agent to the necessity of being very particular in the classification and registering of all the woods supplied, and made use of in the form of Sleepers; in order that we may acquire knowledge, from our experience of the durability of the several kinds; and I consider that very great care should be taken and much more attention, than the Engineers have yet had the opportunity of giving, should be bestowed upon the subject; before any new description of wood should be admitted in the contracts.

10. I am confirmed in these views, of the necessity of great strictness on this important point, from having learned from Lieut. Roberts, that there is an impression abroad among the people in Cuddapah, that much wood, of a very inferior description, has been, and is now, being cut in that District by Contractors for the Railway.

MADRAS,
16*th May*, 1851.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 114.

Extract from the Minutes of Consultation, dated 23d May, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 16th May, 1854.)

The Right Honorable the Governor in Council concurs in the views expressed by the Consulting Engineer as to the necessity of great caution in accepting any new description of wood, not provided for in the contracts for Railway Sleepers; and desires that the Agent of the Railway Company be informed that the Government cannot sanction his receiving other woods than those which the Contractor engaged to supply. Contractors should be required to confine themselves strictly to the particular kinds of timber specified in the terms of their contract, and not be allowed to depart from their stipulation.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
1*st July*, 1854.

No. 223.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

12th June. 1. I have the honor to submit the report of Mr. E. G. Ricketts whom I deputed to Rangoon and Moulmein for the purchase of Timber.

2. It will be necessary, before proceeding to make any observation on this report, to state a few facts and to advert to the communications previously sent.

3. Upon the sanction of Government, dated 21st July 1853, Mr. Ricketts was engaged, upon a salary of Rupees 150, together with the payment of his travelling charges. It was moreover held out that a commission not exceeding 5 per cent. would be allowed, if the business was conducted to the satisfaction of the Company. Having been furnished with the necessary instructions, Mr. Ricketts set out on the 8th of August, as reported by me on the 8th September. On the 4th of October, the fact of the receipt of a few unimportant communications from him from Rangoon was reported by me. On the 13th of December copies of five communications subsequently received by me were forwarded to you. These contained chiefly an account of his efforts to obtain Timber—his having proceeded to Moulmein on account of ill health—and a report of the Timber trade of Pegue. The last of these communications was dated the 1st of November. Mr. Ricketts previously returned to Rangoon; and having as he states, received favourable accounts from Moulmein, he proceeded again thither. This was in the month of December. The present report embraces all that period from the time he first left Rangoon for Moulmein to the time of his return to Madras in May 1854.

4. As soon as I ascertained that my expectations of a profitable purchase of Teak, after the cessation of war in Burmah, were not likely to be realized, and that prices

ruled very high, I requested Mr. Ricketts to return to Madras. This I did, on the 10th December, but it appears from Mr. Rickett's report that when he received my instructions he was in the midst of negociation for buying Timber. He should however have been guided by the price which was fixed by me (viz. 3 Rupees a Sleeper including all charges when landed at Madras), and refrained from going beyond my instructions.

5. The total of his purchases consist of the following Timber:—

Teak.						
47 squares or tons 55-40-3-6 at 40/	2,232	4	0			
15 do. or tons 1-03-03-8 at 35/	374	8	0			
200 crooks measuring about 2,708½ cubic feet at 53	1,050	0	0			
1127 First Class Sleepers at 3/12	4,226	4	0			
65 do. do. at 3/8	227	8	0	8,110	3	0
Thangan and Sasafras.						
427 First Class Sleepers at 2/	854	0	0			
Incidental expenses for shipping	94	6	0	948	6	0
Add.						
Discount on Rupees 1,050 at 3 per cent	31	8	0			
Commission on do. 468-14 at 2½ do.	11	11	6			
Discount on do. 480-9-6 at 3 do.	14	6	8	57	10	2
				9,116	8	2
Freight of Barque "Jona," 393 Tons chartered,	9,825	0	0			
Deduct.						
Freight of 62 Tons sold to Capt. Middleton and Mr. Thompson,	1,251	6	5			
Agent's Commission on Charter,	245	9	11			
Freight on 240 Bags of Rice (not recovered yet) consigned to Messrs. Bainbridge and Co	360	0	0			
	1,857	0	4			
				7,967	15	8
				17,084	7	10
Insurance,				236	13	6
				17,321	5	4
Shipped per "James Hall."						
200 First Class Teak Sleepers at 3/12	750	0	0			
Freight on do. do	508	9	4	1,258	9	4
Total Rupees..				18,579	14	8

6. The Sleepers purchased are chiefly Teak and are excellent. There are also a few Sasafras and Thengan, both said to be hard and durable woods. The Sleepers will in due course be made over to the Engineer Department; and I also propose, with your sanction, to deliver as Stores the remaining Timber to the Chief Engineer, who can use it in building the terminal station and in making waggons to much more advantage than I could make use of in converting it into Sleepers. The 200 Crooks purchased by Mr. Ricketts were not measured by him, but I find they contain about 2,708½ cubic feet. Taking the whole Timber together, Mr. Ricketts calculates that if reduced to Sleepers the cost would be about Rupees 6-2-0 each, which is a very large sum and proves that we must not look to Burmah or the Tenasserim Provinces for Timber, so long as the prices remain at their present rate and freight is so scarce.

7. An account received from Mr. Ricketts from the time he was engaged by the Company to the time he returned to Madras is also herewith submitted. This shows, that

Cash, ...	2,200	0	0
Bills,.......	9,866	8	0
	12,066	8	0

out of a sum of Rupees 12,066-8-0 received and drawn by him by bills, Rupees 11,855-0-8 were expended, leaving in favour of the Company a balance of Rupees 211-7-4. Some of the items appearing in this account have been already sanctioned in the Sleeper Accounts.

8. With regard to Mr. Ricketts' salary and expenses, I would beg to recommend that he be paid up to the 12th May, the day on which he returned to Madras; and that if he be allowed house rent at the rate of 30 Rupees per month, from the date of his reaching Rangoon (30th August) to the time of his quitting Moulmein (5th April). I would also beg to recommend that he be allowed carriage hire at the rate of 30 Rupees per month from 1st January to the 5th April.

9. There are also two or three items, as the payment of a Peon, &c. which I think reasonable charges. The whole is included in the accompanying statement prepared in my Office; and if sanctioned, the total sum due to Mr. Ricketts will amount to Rupees 561-8-0. The Board of Directors and the Government would never wish an Agent employed by them to be a pecuniary loser, although he has not been successful in his mission. I have said nothing about commission being allowed, because it was expressly stipulated that it should only be granted if the Agent's services were such as to render the payment just and proper. Considering the high price of the timber purchased, and the deviation from positive instructions, I cannot consistently recommend the payment of any commission.

I have, &c.,

(Signed) E. SMALLEY,

Agent.

Submitted (with observations) for the sanction of Government.

CAMP BELLARY,
12th August, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

B.

Statement showing certain payments proposed to be allowed to E. G. Ricketts, Esq. Agent, deputed to Rangoon.

	RS.	A.	P.
To Amount of salary from 1st April, 12th May 1854, at 150 Rupees per month,........	208	1	0
House rent from 30th August 1853 to 5th April 1854, at 30 Rupees per month,........	216	15	0
Carriage hire from 1st January to 5th April 1854, at 30 Rupees per month,........	95	0	0
Salary of Message Peon for January, February and March 1854, at 10 Rupees,........	30	0	0
Boat and Cooly hire to Teazer,........	3	0	0
Do. landing at Madras from do........	4	4	0
Palanquin hire to Railway Office reporting arrival,........	1	4	0
Postages,........	3	0	0
	561	8	0

MADRAS RAILWAY AGENCY OFFICE,
1st July, 1854.

(Signed) E. SMALLEY,
Agent.

MADRAS, *12th June*, 1854.

To E. SMALLEY, ESQUIRE,
Agent Madras Railway Company.

SIR,

I have the honor, in accordance with the instructions conveyed in your letter under date the 19th May 1854, to annex a report of my Proceedings, embracing the period called for, viz., from the time "I left Rangoon for Moulmein to the time of arrival in Madras," as also a general and complete Statement of receipts and expenditure.

I have, &c.,
(Signed) E. G. RICKETTS.

P. S.—Indisposition, and the absence of a few papers, have in a great measure delayed the earlier forwarding of this Report.

(Signed) E. G. R.

Severe indisposition, brought on from repeated attacks of intermittent fever, obliged me to leave Rangoon in the early part of October, as per Medical Certificate, granted me by one of the Honorable East India Company's Officers, which I transmitted to you in my letter under date the 14th October 1853, reporting the circumstance. During my stay in Moulmein, I made every inquiry and used every exertion to collect such information as would bear on the Timber trade of the Tenasserim Provinces. It was there, that I was strongly recommended by several gentlemen engaged in the trade, to visit the Forests in the southward, and accordingly I proceeded to Tavoy and Mergui by the first available opportunity, the former situated in Lat. 14°, 4′, Long. 98°, 5′, and the latter in Lat. 12°, 12′, Long. 98°, 25′; and although more of mineral yielding soil, yet there were some fine jungle woods worthy of notice. I explored as much of the country as I possibly could do, during my short stay there, and collected a few specimens which I forwarded to you and called your attention to the Thengan and Sassassars woods in particular. It would perhaps be as well to add, here, that both iron and copper ore is very abundant in several islands of the Mergui Archipelago. Specimens of iron ores from Mergui were pronounced as brown hematites, and from their density would afford good iron in the smelting furnace.

Mergui Iron stone, No. I.	specific gravity,	......	3.37
Do.	" II.	do.	3.18
Do.	" III.	do	3.32

Bog Iron ore is also very abundant, and in many places is quite rich in metal. Large quantities of Tin have been found and exported. At Mergui, Coal has also been discovered; and, on the banks of the Great and Little Tenasserim, coal of superior quality is said to exist. Eighty miles from Mergui inexhaustible beds of coal of uniformly good quality occur on the Thian Khan, one of the main branches of the Little Tenasserim, and I was informed that a private company had determined upon working the mines. To return from this digression; on my return to Moulmein and subsequently to Rangoon, I embodied my examinations and remarks in the shape of a Report submitted to you from thence; and which I beg may be annexed to this as it gives a full account of the Timber Trade of Rangoon, and plainly shows the very many difficulties I had to encounter, and the obstacles that were thrown in my way, I cannot acknowledge having received any Government aid or countenance; and the only authority, to whom I was the bearer of a letter, coldly informed me that the duties of the Commissariat were quite *distinct* from the purchasing of Timber, and that he could give me no assistance; thus was I left to fight single handed against the machinations of the most wild Foresters and Timber Merchants, notorious only for want of integrity and principle; men well versed in the language and up to all the technicalities of the Trade, and usages and custom

of the People. Not disheartened, I applied to the Commissioner of Pegue for permission to be allowed to enter the jungles; and this was not complied with. In fact nothing could be done either in the way of fair open *purchasing* or *converting*. Public eyes had just been opened to the late abuse of the Forests in the Tenasserim Provinces; and the Government were determined that those in Pegue should not suffer as her sister Forests had to the southward and consequently shakled the trade in such a manner, that all exports for the time being ceased: literally speaking, it was at a stand still; for further information I beg to refer the Reader to my Report on the Timber Trade of Rangoon. As regards converting Timber, even if procurable, that was out of the question; as the Burmese (who are the only Sawyers) were far too disaffected to be trusted and naturally disinclined to make themselves in any way useful. Thus it has been shown that little and virtually nothing, could be done in Rangoon, either towards the furtherance or fulfilment of my mission.

In December, sudden but favourable advices from my Broker in Moulmein, who was employed and paid out of my own pocket, to give me every rise and fall in the Market and all information connected with the trade, induced me to proceed thither again; and I was not a little satisfied to find that the Market was again finding its own level. I accordingly set to work at once and entered into negociations for the purchase of Teak, and the preparation of sleepers, without loss of time. It was here that your letters of the 8th and 10th December came to hand whilst busily engaged in converting, which if I had only received earlier, i. e. before these negociations had been clenched, I might have been enabled to have left on the spot, without ever having cut a stick; and which, I have not the slightest hesitation in saying would have pleased me exceedingly, being far from well at the time, suffering as I was from constant attacks of jungle fever, and on the whole anything but comfortable; but of course I made all things subservient to my duty to the Company. and their interest I consulted first; and having once made a beginning, I thought I could not do better than persevere in my work, and made unceasing efforts to give satisfaction. The harassing scrutiny and supervision required whilst converting Timber in Burmah is notorious. It has become a Proverb from the amount of superintendence called for, and when the Pits are once under weigh the work is no sinecure; and more so from the fact, that all the low Pits are situated at the extreme ends of the town, so as to be as near the bank of the River as practicable.

In all January I was looking out for a suitable vessel to convey the Timber to Madras; and it was not till the latter end of the month, that I entered into negociations with Messrs. Macrae Begbie and Co. of Moulmein for the "Jona:" she was just out of Dock and appeared well suited to our purpose. I had two surveys held upon her, one in Dock and the other when the repairs, then in execution, had been completed, which were most favorable: and she was pronounced by Lloyd's Agent "as a good and safe risk to any part" of India or Europe for the conveyance of a cargo of Timber; having thus proved her to be insurable, a charter party was entered into between Messrs. Macrae Begbie and Co. and myself, and mutually signed on the 7th February; accordingly I lost no time in loading her; and whilst loading, your letter of the 21st January was received, stating that my further stay in Burmah was unnecessary, and that you could give no sanction for the purchase of Timber. Now this placed me in a very awkward predicament, not only having drawn upon you for the purchase of Timber, but having had chartered a ship to convey it to Madras. The charter party had been duly signed, Timber had already been put on board; so that nothing remained but to act up to the terms of the Charter, or to stand the Penalty attached to such Agreements. Accordingly I shipped the remainder of Timber on hand, and disposed of the still available portion of freight to the best advantage. It was in the letter above refered to, that I was grieved to find that you should have entertained the thought, that I was acting contrary to instructions; all I can say is I did my best; and although I had many disadvantages to

struggle with, such as the unsettled state of the Country, my own impaired health, and inexperience in a commercial point of view. Still the Company's interest was always at heart, and if they for a moment imagine that I, in defiance of instructions, procured the Timber merely to reap a 5 per centage on the amount expended, I here absolve them from that pledge: the very thought that I have not given satisfaction hurts me much; not merely because I have toiled, and laboured in vain; but because I fear there has been some misrepresentation; however, as I said before I did my best. I cannot say I could bring much experience to bear upon the mercantile part of the business, but that in all my proceedings, as deputed Agent for the Company, I acted up to the best of my judgment.

Before closing this Report of the several purchases made in Burmah, it would be as well to offer a few remarks on the Timber thus procured. Any one at all acquainted with the Teak Trade in Burmah knows the various processes the Timber undergoes before its arrival in the Market; so that at the time of exportation it is in the most perfect state and ready for conversion. The first process is, what is technically termed girdling, or more properly speaking killing, that is, making an incision in the bark around the trunk completely through the sap wood, and suffering the tree to stand in this state until it is dead. After the tree is said to be dead it is felled and is thus allowed to lie exposed to the air for a year or two, after which period it is brought to the market for sale. Now Timber thus prepared (educated as it were) has its advantages in a ratio of ten to one over wood cut in the jungle without reference to either season or growth of the tree, whilst the sap is in circulation; for the sap wood, in most trees, forms a large portion of the trunk, but possesses but little strength and is subject to rapid decay; and as the wet and dry rots are the two serious causes of decay to which Timber is liable, both of which arise from the same origin, namely, the fermentation and consequent putrefaction of the albumen or sap, Timber thus felled and used as a material, in its *unseasoned* state, would soon decay and be of little or no value. Again, we all know that the seasoning of Timber is of the greatest importance, not only to its durability, but to the solidity of the structure for which it may be used, *especially if used as a support*, as a very slight shrinking of some of the pieces arising from the seasoning of the wood might, in many cases, cause material injury, if not complete destruction, to the structure. Natural seasoning also is preferable to any other, as Timber, seasoned in this way, is both stronger and more durable, than when prepared by any artificial process; as by closing the pores of the exterior surface, the moisture from within is prevented from escaping, and therefore promotes one of the chief causes of decay. I make these remarks merely for the sake of showing, that although Timber, prepared as above, fetches a higher price, still it is economy in the end; for, in the one instance, we have a support made of a wood celebrated throughout the world, known to possess an essential oil, and in the most perfect state of conversion, in which we can place the greatest confidence, in regard both to its durability, and strength; whereas, on the other hand, we have a jungle wood, the general properties of which we are totally ignorant of, and that has never been applied to such a purpose before. The amount expended in Burmah on Timber including squares and Railway Sleepers, was Rs. 9,866-8-0 as per Bills No. I., II., III., IV., V. and VI., drawn upon E. Smalley, Esq. will show.

200 Crooks Teak Timber.

1,819 Railway Sleepers, and on the average 70 Tons (in the square) of Teak Timber, although I only paid for 66 Tons, 25 cubic feet, as the real length and the length taken for are two very different calculations; now, in order to strike the value per Sleeper, let us reckon that each crook will allow of cutting into two (some I think may into three) and thus giving 2 Sleepers each 2 × 200 = 400 Sleepers. We have already cut 8,819 Sleepers and allowing 15 Sleepers to the Ton 70 × 15 = 1,050 Sleepers; thus making a total of 3,269 Railway Sleepers, or 3,270 which multiplied by 3 gives 3,270 × 3 = 9,810. It has already been shown, that the amount expended was 9,866-8-0, there-

for the cost price in Burmah, i. e. put on board the "Jona," as all charges are here included, was about 3 Rs. 4 Pice each—then including my salary, travelling allowance to and from Burmah, 2,200 must be added to the cost price of the wood: 2,200 by 9,866-8-0 = 12,066-8-0; this would bring each Sleeper up to about 3 Rupees, 11 Annas, in Burmah. Now in order to find what each Sleeper has cost in Madras the amount of Freight must be added to Rs. 12,066-8-0. The Freight agreed upon in the Charter Party was Rupees 9,825: from this sum must be deducted the amount realized by the sale of the Freight disposed of, my commission on the whole amount, as also the Freight for the rice brought over by the Captain, viz., 61 tons, 16 cubic feet and $5\frac{4}{12}$ inches.

Shipped by R. Thompson,..	1,226	6	5
1 Ton by R. Middleton,..	25	0	0
240 Bags of Rice,..	350	0	0
My Commission on the Charter,..	245	9	11
	1,857	0	4

then 9,825 — 1,857-0-4 = 7,967-15 8 + 12,066-8 = 20,034-7-8. Thus from Rupees 3, Annas 11 per Sleeper, the Freight brings it up to Rupees 6 and Annas 2, as nearly as possible. However one thing is to be said, that Freights were unfortunately very high just then, and had risen all over the world; and that Moulmein Traders have great objection to coming to this Port at all, from the fact that Madras is unable to furnish them with a return cargo, and consequently they have to proceed on to Calcutta, partly in ballast, thus causing a dead loss both in time and stowage.

The last Moulmein Market Report quoted Teak Timber as "still firm at 60." In the Statement of Receipts and Expenditure now forwarded you will perceive that there is a balance in your favor of Rupees 211-7-4, whereas that forwarded to you from Burmah only shows Rupess 1-7-4 which is to be accounted for in the following manner. Six months travelling allowance or more properly speaking half share of carriage hire at 30 = 180. Three months salary to message Kalashee at 10 = 30, in all 210-0-0 which item of expenditure you inform me have not as yet been sanctioned, and consequently cannot be legitimately brought down till they have been. When asking the Company to bear half my carriage hire, I remember mentioning, at the time, that it was an expense I could ill afford, though at the same time could not dispense with, from the fact, that my work called me out at all hours and in all weather, sun, wind, rain all alike, and it was only on my arrival at Madras that your letter of the 22d March, 1854, was put into my hands, stating that Government may or may not see fit to sanction the expenditure.

You will also perceive that no charge has been made, in the account, for House Rent, which was in a measure promised me. You also remember I had your permission to lay out two or three hundred Rupees to build a suitable house for myself in Rangoon, and which I refrained from doing, because it would have been pulled down by Government shortly after, as part of the site of the new town, and thus occasioned a dead loss to the Company; though at the time I was paying at the rate of 30 Rupees per mensem. I am in a manner ashamed to press this application, but circumstances oblige me. Burmah is a notoriously dear and expensive country, and servants and living in a like proportion, so that, with House Rent and carriage hire, I found I could not live upon my pay, and before leaving Moulmein was obliged to apply to my Brother in the 18th Regiment M. N. I. (whose Regiment had been ordered over on Foreign service) for a loan. I submit a schedule of my monthly Expenditure for your information.

House Rent,..	30
Half share carriage hire..	30
2 Servants at 10..	20
Dhoby, Sweepers, Waterman..	10
Balance..	60 out of which I had to pay

my Broker Rupees 15-0-0. 150

Full share of carriage hire would only leave a balance of 30 Rupees, or in other words 15 Rupees as per Broker's salary as shown above.

I should not mention the facts, but as I said before circumstances in a measure oblige me to do so. Being without funds at the time of my departure, Messrs. Macrae Bigbie and Co. were good enough to advance me money for my Passage to Madras and salary for April, which I shall have to refund.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

A.

MADRAS RAILWAY COMPANY.

Dr. *Cr.*

Date	Day	Particulars		RS.	A.	P.	RS.	A.	P.	Date	Day	Particulars	RS.	A.	P.	RS.	A.	P.
1853 Aug.	8	To passage to Calcutta for self and native servant, . . .		186	10	8				1853 Aug.	8	By an order on the Bank of Madras for Company's Rs. .	......	...	...	1000	0	0
		„ Boat, Carriage, and cooly-hire, . . .	5 8 0							Dec.	15	„ an order on the Deputy Commissioner of Rangoon for Co.'s Rupees, . .	......	...	...	1000	0	0
		„ Postage to Berhampore, ...	1 2 0															
		„ Loss by exchange for a bill on Calcutta for C. Rs. 500 at 1 per cent. . . .	5 0 0															
				11	10	0												
		„ Salary for August, . . .		150	0	0												
	12	„ Landing charges at Calcutta including Boat, Carriage and Cooly hire, . . .		5	0	0												
	18	„ Hotel charges for 5 days, at 6 Rs. per diem. . .		30	0	0												
		„ Stationery, viz.																
		„ 2 Blank Books, at 1-8, ...	3 0 0															
		„ 1 Quire Overland Note, ...	0 8 0															
		„ 2 Packets Overland Envelopes, at 0-12,	1 8 0															
			5 0 0															
		„ Less Discount on Cash, ...	0 8 0															
				4	8	0												
	21	„ Deck passage for self and servant to Rangoon, ...	35 0 0															
		„ Table allowance for (10) ten days at 8 Rs. per diem, . .	80 0 0															
		„ Table servant per diem, 0-4-0 . .	2 8 0															
				117	8	0												
	31	„ Landing charges at Rangoon, ...		2	0	0												
Sept.	30	„ Salary for September, . .		150	0	0												
Oct.		„ Deck Passage to Moulmein,		28	0	0												
		„ Advertising charges inviting tenders for Sleepers, . . .		37	8	0												
							722	12	8									
	31	„ Salary for October, . .		......	...	...	150	0	0									
Nov.		„ Deck passage to Tavoy and Mergui, . . .		......	...	...	68	0	0									
		„ Deck passage to Rangoon from Moulmein, . . .		......	...	...	28	0	0									
	30	„ Salary for November, .		......	...	...	150	0	0									
Dec.	2	„ Boat and Boatmen's hire to the Puzendown and Kemendine creeks, . . .		......	...	...	8	0	0									
		„ Postage, ...		......	...	...	2	12	0									
1854 Jan.		„ Deck passage to Moulmein,		......	...	...	28	0	0									
	31	„ Salary for December, .		......	...	...	150	0	0	1854 Jan.		By an order drawn upon E. Smalley, Esq. for Company's Rupees, ...	......	...	...	1081	8	0
		„ Cloth and Tailor's hire for making cover to Cash box,		......	...	...	3	0	0									
		„ Printing Receipts and Boat Notes, . . .		......	...	...	4	0	0	Mar.	24	Do. do. do.	......	...	...	495	0	0
		Carried over...		......	...	...	1314	8	8			Carried over...	......	...	...	3576	8	0

			RS.	A.	P.	RS.	A.	P.
1854		Brought over...	......	...	...	1,814	8	8
Jan.		To Salary for [illegible]nary, . .	......	...	...	150	0	0
		,, An Iron Ham-mer with Pedowk handle with Company's mark, (M Ry.) .	......	...	...	10	0	0
		,, Two Hundred (200) Crooks at 5-4, ...	1050	0	0			
		,, Discount at 3 per cent. .	31	8	4			
						1081	8	0
Feb.	31	,, Salary for February, .	......	...	...	150	0	0
Mar.	7	,, Discount at 1 per cent. on the Bill on the Deputy Commissioner of Rangoon for Company's Rupees 1,000, .	......	...	...	10	0	0
		,, Four Bills of Lading and probable day of sail of Barque "Jona,"	......	...	...	4	0	0
	24	,, Messrs. Gardener Brooke and Co. for money advanced Dubbing 110 Crooks at 8 As.	55	0	0			
		,, Butting 10 do at 2 As. .	1	4	0			
		,, 1 Coil Coir Rope, . .	8	0	0			
		,, Rafting 200 Crooks to Barque "Jona," . .	25	0	0			
		,, 10 Tons 35 C. Ft. 3 C. In. Teak Timber at Rs. 35, .	374	8	0			
		,, To rafting charges, . . .	5	2	0			
		,, Their Commission on Rs. 468-14-0 at 2½ per cent. .	11	11	6			
			480	9	6			
		,, Discount of Rs. 480-9-6, at 3 per cent.	14	6	8			
						495	0	0
	25	,, Converting two hundred and sixty (260) Railway Sleepers of the 1st Class (10 by 10 by 5) from the *best* description of Teak including *all* charges, viz. Purchase of Wood, hire of Saw Pits, Sawyers wages, Hire of Elephants, Lascars, Pit and Elephant Chains, Windlasses, Departmental charges, Superintending, Watching, Cooly-hire, Rope for Rafting, Boat hire, for towing and shipped on Board the Barque "Jona," at 3-12, ...	......	...	...	975	0	0
		,, Converting eight hundred and twenty-three (823) Railway Sleepers of the 1st Class (10 by 10 by 5) from the *best* description of Teak including all charges as above and shipped per "Jona," at 3-12, ...	......	...	...	3086	4	0
	27	,, Fifty-five Tons forty-five cubic feet, three inches and six parts of an inch (55-40-3-6) of Teak Timber of the *best* description of Wood squared, roped, rafted and towed and shipped on the Barque "Jona" at 40 Rs. per ton, . .	2232	4	0			
		,, Converting four hundred and twenty-seven (427) Railway Sleepers of the 1st Class (10 by 10 by 5) and (10 by 12 by 6) from the Thengen and Sassafras woods and shipped on the Barque "Jona," at Rs. 2, ...	854	0	0			
		,, Converting forty-four (44) Railway Sleepers of the 1st Class (10 by 10 by 5) from the *best* description of Teak and shipped per "Jona," at 3-12, ...	165	0	0			
		,, Converting sixty-five Railway Sleepers of the 1st Class as above and shipped at 3-8.	227	8	0			
						3478	12	0
		Carried over...	......	...	...	10755	0	8

			RS.	A.	P.	RS.	A.	P.
1854		Brought over,...	......	...	...	3,576	8	0
Mar.	25	By an order drawn upon E. Smalley, Esq., for Company's Rupees, ...	......	...	...	975	0	0
		Do. do. do.	......	...	...	3086	4	0
	27	Do. do. do.	......	...	...	3478	12	0
		Carried over...	......	...	...	11116	8	0

			RS.	A.	P.	RS.	A.	P.				RS.	A.	P.	RS.	A.	P.
1854		Brought over...	......	...	...	10755	0	8	1854		Brought over...	......	...	...	11116	8	0
Mar.	31	To Salary for March, . . .	......	...	...	150	0	0	Apl.	5	By an order drawn upon E. Smalley, Esq. for Company's Rupees, ...	......	...	...	750	0	0
Apl.	5	Converting two hundred Railway Sleepers (200) of the 1st Class (10 by 10 by 5) from the *best* description of Teak including all charges as above and shipped per "James Hall" at 3-12, ...	......	...	...	750	0	0	May	25	„ do. on the Bank of Madras,	......	...	...	200	0	0
		„ Passage for self from Moulmein to Madras per Barque "Teazer,"	......	...	...	200	0	0									
		To Balance, ...	......	...	...	211	7	4									
		Company's Rupees...	......	...	...	12,066	8	0			Company's Rupees...				12,066	8	0

True Copy of Account received from Mr. E. G. Ricketts.

(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 159.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

With reference to your letter, No. 223, of the 1st Instant, I have the honor to request you will be good enough to forward a statement showing exactly the several sums and total amount for which you now require sanction on account of Sleepers, as portion of the expenditure incurred by your Agent in Rangoon. I am compelled to trouble you for this, because the amount is not clearly specified in your letter; and in para. 7, you say some of the items have been already sanctioned, and it is necessary that Government should know the exact amount for which sanction is now required.

I have, &c.,

CAMP AKRACOOPUM, 14*th July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
24*th July*, 1854.

No. 241.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to your letter, No. 159, of the 14th Instant, I have the honor to forward a Statement showing the amount sanctioned, and those requiring sanction, on account of Mr. Ricketts, the Agent deputed to Rangoon for the purchase of Timber.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP BELLARY, 12*th August*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Statement showing the expenses incurred on account of Mr. E. G. Ricketts, Agent, deputed to Rangoon, for the whole time he was engaged by the Railway Company, sanctioned and requiring sanction.

	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
Sanctioned.									
To salary for the Agent and Sundry incidental Expenses as per Form R, of October and November 1853, January, March and May 1854,..				......	...	...	2,170	5	3
Requiring Sanction.									
To Sundry payments for Timber and Sleepers per "Jona" and incidental Expenses,..				9,116	8	2			
To Freight per Barque "Jona" chartered....	9,825	0	0						
Deduct.									
Freight on 62 Tons sold,..........................	1,251	6	5						
Agents' Commission on charter,......................	245	9	11						
Freight on 240 Bags of rice, (not recoverd yet)........	360	0	0						
	1,857	0	4						
				7,967	15	8			
To Insurance, ...				236	13	6			
„ 200 Sleepers "per James Hall,"				750	0	0			
„ Freight on do.				508	9	4			
„ Government duty on do.				26	4	0			
„ Landing charges, &c., on Sleepers and Timber per "Jona" and "James" Hall,"				294	0	0			
„ Certain payments to be allowed the Agent as follows, Salary from 1st April to 12th May 1854, at 150 Rupees...	208	1	0						
„ House rent from 30th August 1853, to 5th April 1854, at 30 Rupees per month,..................	216	15	0						
„ Carriage hire from 1st January to 5th April 1854, at 30 Rupees per month, ...	95	0	0						
„ Salary of Message Peon from January to March (inclusive) at 10 Rupees........................	30	0	0						
„ Boat and Cooly hire to "Teazer,"........................ ...	3	0	0						
„ Do. landing at Madras for do..........................	4	4	0						
„ Palanqueen hire to Railway Office, reporting arrival,........	1	4	0						
„ Postages..	3	0	0						
				561	8	0			
							19,461	10	8
Total Expenditure							21,631	15	11

MADRAS,
24th July, 1854.

(Signed) E. SMALLEY,
Agent.

On letters from the Agent of the Madras Railway Company, No. 223 *and* 241, *dated the* 1*st and* 24*th July,* 1854 *respectively.*

OBSERVATIONS BY THE CONSULTING ENGINEER.

Min. of Cons. No. 78, dated 21st July, 1853.

The Agent submits a report from Mr. Ricketts who was employed, under the sanction of Government, as an Agent for the purchase of Timber either in Cuttack or Rangoon.

2. Mr. Ricketts proceeded to Rangoon in August 1853, having received detailed instructions from the Agent. He returned to Madras in May last. The result of his mission, it will be seen from the accompanying papers, has not been satisfactory.

3. No Timber was to be had at Rangoon, and the price at Moulmein was unusually high.

4. Purchases were however made by Mr. Ricketts at an expenditure of Rupees 9,866-8-2 and a further sum of Rupees 8,713-6-6 charged for freight. The number of Sleepers supplied, at the above expenditure, is calculated by Mr. Ricketts at 3,270. The price therefore actually paid by him, exclusive of his own salary, and expenses, and landing charges at Madras, &c. may be taken at Rupees 5-11-0 per Sleeper.

5. The total expenditure, however, upon this wood, as shown in the accompanying abstract statement, prepared by the Agent has been (including certain allowances to the

Agent) Rupees 21,631-15-11 ; which, allowing the number of Sleepers, assumed by Mr. Ricketts to be available, brings the price of each up to Rupees 6-10-0.

6. Mr. Ricketts makes it Rupees 6-2-0, but he overlooks the freight for 200 Sleepers per "James Hall." Rupees 508-9-1, and Insurance Rupees 236-13-6; and did not include landing and incidental charges at Madras which were not included in his own account of disbursements.

7. Of the Timber supplied at this high price, the teak beams or squares appear to be of excellent Timber: all the Sleepers are also unexceptionable in quality, by far the best yet laid down.

8. Of the 200 "Crooks" an equally favourable account cannot be given, but nevertheless much good and useful Timber will be got out of them. Mr. Smalley's proposal, to make over to the Chief Engineer for building purposes all the Timber excepting the Sleepers, I think judicious: since both the squares and crooks are likely to be applied more economically in that manner, than by cutting up into Sleepers; and the beams will be of great value in the Station buildings. It is to be regretted that Mr. Ricketts' mission was not attended with more favourable results; neither can he, I think, be altogether exonerated from the charge of having disregarded the instructions sent to him by the Agent, on the 10th of December, to return to Madras. Some excuse may be found perhaps in the anxiety which he would naturally feel to complete negociations already entered upon and to escape the mortification of returning without having accomplished the object of his appointment.

9. I would recommend that the expenses shown in the accompanying statement be sanctioned; that the several allowances, which Mr. Smalley proposes to grant to Mr. Ricketts, be also passed; and that the Agent be authorized to take credit, in his accounts, for the whole, amounting to Rs. (19,461-10-8) nineteen thousand four hundred and sixty-one, Annas ten and Pice eight.

CAMP BELLARY,
12*th August*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 185.

Extract from the Minutes of Consultation, dated 26th August, 1854.

Read the following observations of the Consulting Engineer on letters from the Railway Agent.

(Here enter 12th August, 1854.)

The Right Honorable the Governor-in-Council sanctions the charges incurred in procuring Timber from Moulmein for Railway Sleepers, and the allowances proposed to be passed to the Agent deputed for that purpose, amounting together to Rupees (19,461-10-8) nineteen thousand four hundred and sixty-one, Annas ten and Pice eight, for which sum the Agent of the Railway Company is authorized to take credit in his Accounts.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

On a letter from the Agent of the Madras Railway Company, No. 285, dated the 26th August, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards monthly statement showing the sums expended in purchase of Sleepers during the month of July, Rupees 21,983-15-10; and also a return of the total number supplied during the month and previously.

The above expenditure has furnished 6,623 Sleepers, which brings the average cost up to Rupees 3-5-0 each nearly; some of the lesser items, in this account, however, are applicable rather to the general account than the particular supply; such as "expenses at Vellore" for upwards of six months, "a set of brands," "Watchmen."

I would recommend that the Agent be authorized to take credit in his account for the sum of Rupees (21,983-15-10) twenty-one thousand nine hundred and eighty-three, Annas fifteen, and Pice ten.

CAMP PALMANAIR,
25th September, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 215.

Extract from the Minutes of Consultation, dated 3d October, 1854.

Read the following Letters.

(Here enter 25th September, 1854.)

From the Consulting Engineer for Railways.

(Here enter 20th September, 1854.)

From the Railway Agent submitted through the Consulting Engineer.

The Right Honorable the Governor in Council sanctions the expenditure of Rupees (28,877-9-10) twenty-eight thousand eight hundred and seventy-seven, Annas nine and Pice ten, incurred in procuring Sleepers for the Madras Railway, during the months of July and August last.

July,	Rs.	21,983	15	10
Aug.	Rs.	6,893	10	0
		28,877	9	10

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
6th January, 1854.

No. 5.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to request that you will be good enough to obtain the sanction of Government for my inviting Tenders, for the supply of two hundred and forty thousand Sleepers, deliverable at rates, and places, hereunder specified.

Trivellum,	North Arcot District.	Rs.	30,000
Goriattum,		„	30,000
Vaniembady,	Salem District.	„	30,000
Moroorpully,		„	30,000
Salem,		„	30,000
Coimbatore,	Coimbatore District	„	30,000
Palghaut,	Malabar District.	„	30,000
Ponany,		„	30,000
		Total...	240,000

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP PALGHAUT, 17*th January,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On a letter from the Agent of the Madras Railway Company, No. 5, dated 6th January, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent requests permission to invite Tenders for further supply of 240,000 Sleepers to be delivered at different stations, along the line, between Madras and the Malabar Coast.

The former advertisement invited Tenders for 90,000 only, not quite sufficient for the line as far as Menil. Contracts have been entered into for the greater portion of these at a price (Rupees 3-4-0 each the most part), fair enough for the neighbourhood of Madras, and for the commencement of the work, but much too high for other portions of the line.

The total number of Sleepers, supposing blocks not to be used, that would be required for the whole line, between Madras and the Western Coast, exclusive of the branches, will be about 800,000.

I would recommend that the Agent be permitted to advertize as he proposes; and in conveying the sanction of Government, I shall suggest some alterations in the places named for their delivery.

CAMP PALGHAUT, 17*th January,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George,

FINANCIAL (RAILWAY) DEPARTMENT,
No. 22.

Extract from the Minutes of Consultation, dated 27th January, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 17th January, 1854.)

The Agent of the Railway Company is authorized to invite Tenders for a further supply of (240,000) two hundred and forty thousand Sleepers for the Railway.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 8.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In forwarding for your information the accompanying copy of an Extract from Minutes of Consultation approving of your proposal to invite further Tenders for Sleepers, I have the honor to suggest to you that it would be well, if possible, to name such places for the delivery of Sleepers as are rendered easy of access by the existence of tolerable roads.

No. 22, dated 27th January, 1854.

In the Statement contained in your letter, No. 5, of the 6th of January, I observe "Mororeputty," the position of which in this respect would considerably enhance the Contractor's expenses. I would recommend Moropoor instead; as having a good road leading to it from both directions.

Muttoor appears another convenient place, lying on the high road, and between Tripatoor and Moropoor. I would observe also that the expediency of delivering Sleepers at Ponany appears doubtful; and that Goriattum will be not less than six miles off the line: I would recommend Policondah instead.

As it is probable that most of the Sleepers for that portion of the line will come from the Westward, it would be an advantage to have them so deposited, as to render the subsequent conveyance of any of them back from East to West unnecessary.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
6th February, 1854.

P. S.—It would be well, perhaps, in your advertisement, to mention the Talook in which each Village named is situated.

MADRAS RAILWAY AGENCY OFFICE,
28th March, 1854.

No. 93.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to transmit the accompanying copy of a letter from Mr. G. Williams, who contracted to supply the Railway Company with 30,000 Sleepers in the month of August last. Mr. Williams has found it impossible to fulfil his contract, and I have every reason to believe that his statement is correct. Freight has been scarcely procurable, and that which he has obtained has been at a ruinous rate. He commenced work too late in the season; and had thus to pay for land carriage instead of water carriage.

27th March, 1854.

2. Mr. Williams has shown great energy, and done everything in his power to meet the wants of the Railway Company. He has done more, for he has opened a field for further supplies of Timber.

3. It cannot be the wish of the Railway Company, nor of any public body, to press hardly upon a Contractor, who has not failed from any fault or omission, but from causes, which could not be overcome.

4. I should propose to receive the 12,000 Sleepers which Mr. Williams can supply; and to allow him until the beginning of April 1855 to deliver the remaining 18,000. The chief cause for regret in this failure is the loss of time. There will be no loss in money. I advanced Mr. Williams Rs. 12,000 as a loan, but for that I have the security of Company's Paper.

5. In a new and large work, like that of the formation of a Railway in India, I think we should afford every encouragement to the residents to come forward, and supply our wants. The Timber trade is a new one, and requires time and consideration on the part of those embarking in it. The Railway Company will be the eventual gainers.

6. We have, as you are aware, advertised for the delivery of 50,000 additional Sleepers at Madras. I should be very glad to aid Mr. Williams by giving him a further contract; but as this is a distinct question, he should make a Tender in the usual manner. Having an establishment prepared, and knowing all the particulars of the trade, he will be able to work better and cheaper than any other person. I would willingly assist him in any fair and proper way; and I should be prepared to recommend an advance of money—although we wish to avoid as much as possible the introduction of that system—if Mr. Williams is able to give security.

I have the honor, &c.

(Signed) E. SMALLEY,
Agent.

MADRAS, 27*th March*, 1854.

To E. SMALLEY, ESQUIRE,
Agent Madras Railway.

SIR,

As I have not been able to fulfil my contract with the Railway Company for the supply of 30,000 Sleepers, which ought all to have been delivered in this month, beginning the delivery in January, I am anxious to explain the circumstances, which led to my failure, in the hope of being allowed to enter into a new engagement for the fulfilment of that portion, that will remain after the part supply which I have been able to ship shall have been delivered, and I trust to meet your indulgence.

The extraordinary rise in Freight, in Madras and Calcutta, for Europe, and other countries, and the present increase in the price of grain on the Coast prevented my getting more than a few Tons of shipping this season, consisting of Country Vessels, of which I secured eleven in number to bring down about 12,000 Sleepers. Another impediment arose from the lateness of the season when I set out, although I lost no time after my Tender was accepted; for in two months after I arrived in Goomsoor I succeeded in getting upwards of 2,000 Tons of wood, but ere I could have wanted shipping those on the Coast would have been disposed of for the season; but in a first undertaking there is necessarily much to be learnt, and I fear I shall be a sufferer in pocket for the experience I had to buy.

You are aware that I was twice in Madras and Calcutta, from Goomsoor to Coringa, trying to get ships. Freights last year were from 4 to 6 Annas a bag of rice, 13½ of which go to a ton, for a vessel called the "Amazon," which was taken at Coringa to bring down the same kind of wood as I am supplying from Damra.

Of five vessels already come in, the "George" which brought 819 Logs, making 2 Sleepers each, received 620 Rupees. The "Amelia" for 650 Logs received 2,000

Rupees. The "Jane" a vessel of 30 tons less than the "Amelia," is to receive 2,000 Rupees (less 45 Logs shut out). The other two vessels receive very high rates also, and you will perceive that, to accomplish my engagement, I hesitated not to make any sacrifice.

I shall give a brief account of my doings, which will satisfy you that I laboured, according to the emergency of the occasion, to realize your expectations. Having left Madras, after signing my agreement on the 24th August, I sailed straight for Caulingapatam and arrived there on the 1st September, when I immediately set out towards the forests, I had previously explored on my own account before making my Tender, commencing my journey on the Southern Bank of the Chicacole river, and proceeded north to Goomsoor through Injelly, Aska, &c., taking up the Forests between the Chindragaree mountains on one side, and Coorminghia Ghaut on the other, besides a portion near Goonapoor and Maringay on the South of Purlakimmedy. To set an establishment over such an extent of land occupied nearly a full month; and it was necessary to distribute the work so extensively in order to be able to begin delivery in January, as agreed in my contract. The work of felling then may be said to have actually been begun in October. In hopes of getting some rain while the wood was being cut, I made arrangements for 200 Rupees bamboo rafts; but the rains failed altogether; and up to the end of October I got no more than 14 rafts, down to the Sea Beach at Ganjam, by means of water. This obliged me to break up the rafts and commence carting, a mode 50 per cent. more expensive than rafting; but there was no time to be lost, and this instance is another proof of my readiness to meet my engagement, at a great sacrifice, rather then wait for the chance of means by water.

The total number of trees felled by the end of December yields nearly 12,000 Logs of two to three Sleepers each; but I was obliged to reduce the thickness of my wood on account of the weight for carting as well as the expense of freight, so that I might augment the number of logs to be sent, to afford at least two Sleepers each, as a cart would take but only one of three Sleepers, whereas it could take two Logs of two Sleepers each.

The extra expenses I had to incur in this undertaking may be stated as follows:—

In carting on account of water carriage failing.
In breaking up rafts originally constructed.
In reducing the thickness of the wood.
In travelling to and fro for shipping after the season had so far passed.
In the high rates paid for freight.
In paying commission to Ship owners for guarantees as I was a stranger on the coast.
In paying large advances as inducement to Ship owners.
In setting up a large establishment of supervisors than would be necessary if there was more time.

Under these circumstances, I trust you will obtain for me a further period to fulfil my contract, and also give me a chance of taking up the 50,000 Sleepers required to be supplied by your present advertisement, if it were only to prevent any other from interfering to obstruct the completion of my present unfulfilled contract in a country I have opened up at a great personal risk and (as far as I have fulfilled) some pecuniary sacrifice. It cannot be necessary for me to dwell on the consequence which a competition in the same locality would produce to affect an undertaking, which depends for success in the employment of almost the entire number of ryots and carts available in the jungle tracts and villages of the whole Ganjam Collectorate.

I thought it best not to disband my remaining establishment, until the question about my unfulfilled engagement is decided. The time required to complete my contract

is, from this to April 1854, though I have no reason to suppose it will take this time; but considering how unfortunate I have been already, I am obliged to ask a longer time than appears to be necessary, but the Railway Company may depend upon me not to waste a moment. It is true that I have got over most of the difficulties which opposed me at first, and that I have learned something, but though I have settled as it were a Trade in Timber between the Khond country and the low country, there will be new difficulties if we should happen to have a good Monsoon this year by the hands and the oxen being turned to the fields, and a good deal of my wood has to be brought from the points of delivery to the Beach at Ganjam.

Trusting to be favored with as early a reply as possible.

I remain, &c.,

(Signed) G. WILLIAMS.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 46.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 93, of the 28th Ultimo, giving cover to a communication from Mr. Williams, one of the Contractors for Sleepers. I quite agree with you in thinking that Mr. Williams, though not successful in fulfilling his contract entirely, has evinced much energy in all his proceedings, and done much, to the advantage of your Company, towards the opening up of the Saul Forests to the Northward. I consider with you that it would be just and politic to grant him the extension of time solicited; viz., till April next for the delivery of the remaining portion of the Sleepers contracted for. Any tender he is prepared to make, with reference to your late advertisement, must of course be made, as you observe, the subject of a special and separate communication.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
3*d April,* 1854.

MADRAS RAILWAY AGENCY OFFICE,
3*d April,* 1854.

No. 106.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

Mr. G. Williams, a Contractor for Sleepers, has applied to me for pecuniary assistance as detailed in the accompanying copy of a letter from him. As stated in my letter to your address of the 28th March, I would be glad to render any fair assistance. If 2,[illegible]4 Logs have been actually landed, and if

1st April, 1854.

the description of timber is approved of by our Engineers, I should be willing, with your sanction, to advance Mr. Williams 15,000 Rs., but I should stipulate that the wood is to be actually made over to me with an agreement to cut into Sleepers within one month. This is no doubt an irregular manner of conducting business, and it is only under peculiar circumstances, that I would recommend the case for favorable consideration.

I have the honor to be, Sir,

Your most obedient Servants,

(Signed) E. SMALLEY,

Agent.

MADRAS, 1*st April,* 1854.

To E. SMALLEY, ESQUIRE,

Agent, Madras Railway.

SIR,

I beg to subjoin a list of the vessels, that have come in with my wood, out of the eleven that I engaged to bring, to Madras, about 12,000 Sleepers this season; particulars regarding which I stated in my last letter.

The five vessels, that have arrived here, have brought 2,784 Logs, and they are nearly all landed; but the landing of the few that are not already, will certainly be finished on Tuesday the very latest. These 2,784 Logs will yield 5,568 Sleepers, valued at Rupees 18,096.

Considering the difficulties I have encountered, in order to accomplish even so much of my contract; and the enormous amount of freight I have to pay for the eleven vessels, which is estimated at nearly 18,000 Rupees, I earnestly beg you will be willing to advance me at least 17,000 Rupees, until the wood is cut, and ready for delivery.

The process of cutting with the hand is very tedious: I have therefore arranged for cutting by means of a circular saw, the machinery of which is nearly completed; and I shall not be above a month, it is hoped, before I am able to deliver the whole of the wood, cut into Sleepers.

Of the money I now ask you to advance, I shall return you 12,000 Rupees to redeem my Company's bonds now in your hands; and as there is near 40,000 Rupees worth of wood under weigh, including the quantity already come in, I trust you will kindly accede to my wishes, and I shall not spare myself, in doing all that is necessary to deliver the wood soon.

I remain,

Sir,

Your most obedient Servant,

(Signed) G. WILLIAMS.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

RAILWAY DEPARTMENT,

Consulting Engineer's Office.

No. 8.

FROM MAJOR T. T. PEARS, C. B.

Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter, No. 106, of the 2d Instant, forwarding copy of an application

from Mr. Williams for an advance of Rs. 17,000, I have the honor to state, that, under the circumstances of the case, I think Mr. Williams' request not unreasonable, and you would do well to comply with it, taking over the whole of the timber landed, as security, with an agreement from the Contractor to have it sawn up within the month.

It will be well that the Contractor be made distinctly to understand, that the wood on the present occasion is merely received in deposit, as a security for the advance; but that it is not to be considered accepted, as a portion of his contract, till the Sleepers have been prepared, examined and accepted.

As a matter of account, it will be better that this advance does not appear as an expenditure in your Sleeper account, until the Sleepers have been passed, and payment made for them.

I have, &c.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
5th April, 1854.

RAILWAY DEPATMENT,
Consulting Engineer's Office.

No. 59.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor in reply to your letter, No. 109, of the 10th Instant, to convey to you the authority of Government for the payment of the stipulated price for 500 Sleepers delivered to Mr. Wilson.

I beg to observe, on this occasion, that it is desirable the Chief Engineer or his representative on the occasion, being a fully qualified officer, should certify, clearly to having seen, and approved of, the Sleepers thus recommended for purchase.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
11th April, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 63.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Your Chief Engineer being about to commence upon laying the permanent way, I have the honor to request your particular attention to the desirableness of noting as distinctly as possible the various descriptions of timbers made use of as "Sleepers." The Contractors have undertaken to supply wood of several varieties. The characteristic qualities of these several kinds of woods are little known to us. In every case their application, to this particular purpose, may be considered experimental; and we may reasonably expect to find many and various results.

It will be a matter of much regret hereafter if the arrangements now made for noting and recording the exact numbers of each description of wood and the localities in which they are laid should be insufficient to lead us to sound and accurate conclusion of their relative value and especially of their durability and consequent applicability to this particular purpose.

I have the honor, &c.,

MADRAS, 18th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 80.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 126, of the 29th Instant, and in reply to convey to you the authority of Government for the payment of the stipulated price of 500 Sleepers delivered by Mr. Williams the Contractor, and passed by the Resident District 1.

As a general rule you are aware all materials should be passed by the Chief Engineer or which is the same thing by his subordinates acting under his instructions.

In all future occasions I beg that it may be shown, as stated, that the examination and report has been made under his instructions.

I beg also with reference to the mark which Mr. McNair states that he has made to request your particular attention to my letter of the 18th April, 1854, No. 63.

I have, &c.,

MADRAS, 1st May, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
26th May, 1854.

No. 166.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to forward the accompanying 6 original Tenders with translations thereof in English for the supply of 51,000 Sleepers at Madras, together with copies of correspondence that has taken place between myself and the Chief Engineer on the subject, and request you will obtain the sanction of Government for accepting the same.

To Chief Engineer, 28th April 1854, No. 169.
From do. 8th May do.
To do. 23d do. do., No. 215.

2. The price per Sleeper is Rupees 3-2-0 of the first class, which I consider, from all the information I have been able to obtain, very fair.

3. It is proposed to insert in the contract a provision that any Sleepers of a new

wood not specified, even although passed by the Engineer must be tested during six months and one-tenth of the price will be kept in deposit during that period to make good any deficiency.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
28th April, 1854.

No. 169.

FROM EDWARD SMALLEY, ESQUIRE,

TO GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

	Sleepers.
No. 2. From Veerasawmy Reddy and Gopauloo Naick, dated 15th April 1854 for the supply	15,000
„ 3. From Anuntah Reddy, dated do. for do.	15,000
„ 4. do. Paupee Naidoo, do. do. for do.	6,000
„ 7. do. Anuntah Charloo, do. 17th do. do. for do.	9,000
„ 8. do. Mahomed Kossim, 19th do. do for do.	2,500
„ 9. do. Veucetah Reddy, 25th do. do. for do.	3,500
Total...	51,000

I have the honor to forward the accompanying Tenders for the supply of 51,000 Sleepers at Madras as per margin, together with samples of woods produced therewith.

2. The rate of Rupees 3-2-0 per 1st class Sleeper is favorable.

3. I request you will return me the Tenders with your opinion thereon that I may send them for the sanction of Government.

4. I beg to observe that some other Tenders have been received, all of which have been rejected as the price thereof have been very exorbitant, varying from 4 to 7½ Rs. per Sleeper.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 8*th May,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

TO EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I yesterday received by Banghy the musters of wood proposed for Sleepers.

2. The most of these require no comment having been already frequently before us.

3. Of some there are no musters, viz. :

Naravapah,
Kondah Appah,
Terooloo.

4. The muster of Saul is, I think, not a true one, as it floats in water, which is not the character of that timber.

5. And one muster of aucha wood is quite yellow; it may be sap wood, but it is not a proper specimen.

6. Many of the descriptions of the timber supplied for Sleepers, not named in the printed list are liable to be attacked by very small insects, which speedily destroy them. I do not refer to white Ants.

7. If you think it practicable, I should like to have a stipulation that for all timber not specified the 10 per cent. be retained for four months to see if they are attacked by this insect. If they are not attacked in that time, I understand there is no further cause for fear, if during the four months, they are attacked the 10 per cent., should be forfeited.

8. If you think that, with Natives, this stipulation is not practicable, I would suggest accepting these tenders only for those descriptions of timber named in our printed specifications.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

MADRAS RAILWAY AGENCY OFFICE,
23d May, 1854.

No. 215.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

With reference to the remarks contained in the first part of your letter of the 8th Instant, regarding the samples of wood produced with tenders for the supply of Sleepers, I have the honor to offer the following explanation.

2. The wood named Naraeppah in Teloogoo is called Aucha in Tamil; and the wood Kondah Ippah in Teloogoo is called Eloopay in Tamil.

3. Of Tevooloo or Pedowk a sample has just been produced, which is herewith forwarded.

4. With regard to the samples of Saul wood it appears to be a sap portion of the wood.

5. Of this, as well as of Aucha wood, good samples were required to be produced, and are forwarded to you together with the above per Bangy.

6. A provision will be made in the deed of contract as suggested by you, to the effect that in cases, where the Sleepers produced of woods different from those mentioned in the specification, become injured within four months,* after their delivery, by worms, the Contractors will have to forfeit a tenth portion of their stipulated price or make good the deficiency by replacing approved Sleepers.

* Note.—Six months will be stated in the contract.

I 3

7. We shall, I fear, continue to have some trouble about the names of woods, but the Contractors must be clearly informed that all bad wood will be rejected.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 123.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 166, of the 26th ultimo, and to convey to you the authority of Government for the acceptance of the six Tenders for Sleepers therewith upon the terms and conditions recommended by you, viz., that such Sleepers, as may be supplied, upon these contracts, of woods not mentioned in your printed specification, shall be subjected to trial for six months, before full payment is made.

The Contractors should be warned against bringing any woods, not mentioned in their contract.

I would take this opportunity of requesting to be informed what measures are adopted for distinguishing the several descriptions of wood.

Great care will be requisite in the first instance in ascertaining that the woods are in all cases such as they are described to be. There is great resemblance between some description of woods, varying much in their real qualities; moreover there is considerable confusion of names, which adds to the difficulty of distinguishing one from another.

To enable your Engineer to watch accurately the behaviour of the several descriptions of woods, and thus to attain to some reliable knowledge of their different qualities, I would suggest, as the simplest mode of marking them, such plan, as that of lettering each contract, and numbering each description of woods supplied under it.

Thus one contract might be marked and entered in your books A A A and the Contractor desired to stamp, or cut, every Sleeper distinctly with that letter. As the Sleepers supplied are passed and classified, they might also be numbered; thus upon the failure of any one, your Engineer would have the means at hand for determining the nature of the wood, and the date of supply.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
1st *June*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
7th June, 1854.

No. 182.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

3d June, 1854.

1. With reference to the latter part of your letter of the 1st Instant, I have the honor to forward the accompanying copy of a letter from the Chief Engineer.

2. Mr. Bruce proposes to brand every Sleeper with a number distinguishing the sort of timber. He has specified 23 sorts, but there is one number, 21, Tanka, which should be omitted, as it is not considered good.

There are two others which should be added, and which will increase the number to 24, viz., Puchaputty and Tumbuck. The latter is a kind of Sissoo.

3. In addition to this, I propose to call upon each Contractor to brand each Sleeper with the initials of his name, which will, I think meet your views.

4. I hope that we may at no distant period obtain a list of timber in the Native and English languages of all the kinds suitable for Sleepers, together with samples of a good size to be preserved in my office.

5. When there are two names both should be given. When Eleppa is mentioned, it should be called Dud Eleppa, that being the proper sort.

6. The wood called Pagulla, No. 18, in Mr. Bruce's list is, I suppose, Panly. The wood called Avangil, No. 22 is also called Coombandry.

7. It would be worth while to pay an intelligent Carpenter or person acquainted with the timber trade to assist in arranging a complete list. It might be difficult to find a proper person, but perhaps at Vellore we might succeed.

I have the honor to be,

Sir,

Your most obedient Servant,

(Signed) E. SMALLEY,

Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 3rd June, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

Referring to your letter, No. 63, I beg to observe that I have made arrangements to brand each different kind of Sleeper with a specific number on the heart of the wood, so as to be able to recognize without difficulty the name of the wood at any future time.

2. To sort and arrange all the Sleepers so as to have each kind by itself, would involve great labour and expensive carriage.

3. I propose to let the numbers stand for the names of the timbers as follows:—

1. Teak.
2. Saul.
3. Sissoo.
4. Pedowk.
5. Kurkuttah.
6. Kurrah Murdah.
7. Maroothy Marum.
8. Aucha Marum.
9. Vangay Marum.
10. Kadokay Marum.

11. Necanee Marum.
12. Myladee Marum.
13. Sem Marum.
14. Curree Vangaoo Chella Woorgay Marum.
15. Perumbay Marum.
16. Eroovaloo do.
17. Vel Vaugay do.
18. Pagulla do.
19. Eleppa do.
20. Karivallum do.
21. Tanka do.
22. Avangil do.
23. Poomathice do.

I have, &c. &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 131.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 182, of the 7th Instant with its enclosures; I think Mr. Bruce's proposition to brand each Sleeper with a number, indicating the nature of the wood, a very good one.

Of the woods enumerated, I have to remark that "Teak" if procured in the forests of the Central District of the Peninsula must be received with caution.

There are, I am told, two distinct kinds neither of which are comparable with the Malabar wood or that of Pegue. "Pedowk," I believe, is only procurable in the Tenasserim Coast. Of the woods now proposed to be added to the original list, Karoovallum called by Dr. Wight (Accacia Arabica) commonly known as Babool, may be tried without hesitation also dud Eloopay.

Before you admit the others Pagulla, Tanka Avangil, Poomathree Putchaputty and Tumbuck, I shall be glad to have some further particulars about them, than Tamil and Teloogoo names written in the Native as well as the English character, and, if possible, the Botanical names.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
3d *April,* 1854.

MADRAS RAILWAY AGENCY OFFICE,
17*th June,* 1854.

No. 203.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to the requisition contained in the latter part of your letter of

the 12th Instant, No. 131, I have the honor to forward the accompanying Statement showing in detail the names, in different languages, of several kinds of Timber mentioned in the specification, together with the names and qualities of those woods, which are, on examination, pronounced to be good, and proposed to be added to the list of specification; as well as some other supposed to be good, but which require further examination.

2. The Teak Timber will require to be separated; the Pegu and Malabar Teak having one distinguishing figure, and Country Teak another. As yet we have not received any country Teak.

3. There is a wood called Pedowk found in many parts, but whether it is of the same species as the Moulmein Pedowk I do not know. It should not be included in our List of approved woods at present. The Pedowk, mentioned in the specification, referred to the Moulmein Timber.

4. Of the woods now proposed to be added to the original List it is not, as you observe, the wood Karvallum (called by Dr. Wight Acacia Arabica) that was intended, but the two species "Diospiros Ebenaster" or Ebony, or a species of Sissoo wood included in the accompanying list.

5. I think it would be advisable to add at once to the List these two kinds of wood. Mr. Sullivan has supplied several Sleepers of these woods under the designation Kawtoye—at least I believe it to be so.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Statement showing the names in different languages of woods fit for or likely to be fit for Sleepers.

Number.	*Botanical Names.*	*English.*	*Tamil.*	*Teloogoo.*	*Observations on the quality of Timber.*
			Woods mentioned in the specification.		
1	Tectona Grandis,	Teak Wood,	தேக்குமரம்	టేకు కర్ర	All these woods are mentioned in the specification.
2	Shorea Rubosta,	Saul Wood,	ஆசனிமரம்	జేగు కర్ర	
3	Dalbergia Sissoo,	Sissoo Wood,	,,	యిరిగి చావ కర్ర	
4	Do.,	Peddowk Wood,	பிட்டாருமரம்	పెద్దాకు కర్ర	
5	Zyziphus Glabrata,	Kurkuttah Wood,	கத்கட்டாமரம்	,,	
6	Terminalia Glabra,	Curry Murdah Wood,	கரிமருதை மரம்	కొనమద్ది కర్ర	
7	Terminalia Alata,	Maroodum do.	மருதம் மரம்	మద్ది కర్ర	
8	Diospyros Ebenastor,	Aucha Wood,	ஆச்சாமரம்	యేటిమాను - నార వేటమాను	
9	Pterocarpus Marsupium	Yegesah Wood,	வேங்கை மரம்	వేగిసి కర్ర - పియసాలు కర్ర	
10	Terminalia Chebula,	Chebulic Myroobalan,	கடுக்காய் மரம்	కరకాయ కర్ర	
11	Canthium Parviflorum,	Nullabalasoo,	நெக்கணிமரம்	నల్ల బలశెమాను	
12	Nanclea Cordifolia,	Mungay Cadumbay,	மஞ்சகடம்பை அல்லது, மைலடிமரம்	నెమలి అడుగుమాను	
13	Pterocarpus Santalinus,	Red Sanders Wood,	செப்புசந்தனமரம்	చందనం కర్ర	
14	Acasia Odoratissima,	Curry Vangah do.	கருவேங்கைமரம்	నల్ల వేగిసిమాను	
15	Prosopis Spicigera,	Panumbay Wood	பாம்பைமரம்	,,	
16	Tnyga Xylocarpa,	Eroovauloo do.	இருவேலு இருள் இருளாமரம்	జిట్టగి మాను	
17	Do.,	White Vegesah do.	வெள்வேங்கை	తెల్ల వేగిశిమాను	
	Woods	not mentioned in the specification but pronounced good by Mr. Wilson, Resident Engineer, and by Vellore Carpenters.			
18	Acacia Arabica,	Acacia Arabic Wood,	கருவேல மரம்	నల్ల తుమ్మమాను	*Vellore Carpenters.*—Very good Sap Wood if it cannot be trusted.
19	Bassia Longifolia,	Bassia Wood,	காட்டு இலுப்பை அல்லது, மலையிலுப்பைமரம்.	కొండయిప్ప - ల్యాక్ - అడవి యిప్పమాను	*Ditto.*—Two kinds of this the *common* Eloopay and the Dud Eloopay, the former not to be trusted as it splits when exposed to the sun the latter very good. *Mr. Wilson.*—Appears good and sound and free from any sign of insects.
20	Mimusops Hexandra,	Paulay Wood,	பாலைமரம்	పాల మాను	*Vellore Carpenters.*—Very good.
21	Do.,	Coombandree Wood,	அவிஞ்சவிமரம்	కుంబాద్రిమాను - ల్యాక్ - పులుసుమాను	*Ditto.*—Very good.
22	Do.,	Model Pacha Oola Wood,	பச்சைபட்டைமரம்	,,	*Mr. Wilson.*—A light coloured wood and seems of a sound kind. *Vellore Carpenters.*—Good.
23	Diospiros Ebenaster,	Ebony Wood,	காக்கடாத்திமரம் இதற்கு காற்விளான் என்றும் காட்டுவாழையென்றும் காட்டுவாய்யென்றும் பேர்சொல்லுகிறார்கள்	తూకి - ల్యాక్ - పూడి - ల్యాక్ - కాక-పూటి - అని చెప్పబడును	*Mr. Wilson.*—Yellow colour with Ebony coloured heart and bears a good name amongst the natives.
24	Do. do.	Species of Sissoo called Toomicka Chova,	ஷை ஷை	తుమ్మికచావ	*Ditto* ditto ditto.
			Woods requiring further examination.		
1	Chloroxylon Swietenia,	Salin Wood,	,,	విల్ల - ల్యాక్ - విల్లకర్ర	Of all these woods Mr. Sullivan supplied Sleepers.
2	Do.,	Tumbuck or a species of Sissoo,	தம்பகமரம்	తంబక్ మాను	
3	Do.,	Shalai Wood,	செலிமரம்	శెల మాను	
4	Do.,	Cudapai Wood,	கடப்பைமரம்	,,	
5	Acacia Sundra,	Carangally Wood,	கருங்காலிமரம்	,,	
6	Cassia fistala,	Cassu Wood,	கொண்ணைமரம்	రేల మాను	
7	Do.,	Cadapai Wood,	கடப்பைமரம்	,,	
8	Do.,	Carumbai Wood,	கறம்பைமரம்	,,	
9	Chloroxylon Dupude,	Indian Dammer Wood,	குங்கிலியமரம்	గుగ్గిలం మాను	
10	Do.,	Kaura Wood,	காரைமரம்	,,	
11	Wrightia Auliday Sonlema,	Palavaranee Wood,	வெப்பாலைமரம்	పాలవరేను మాను	
12	Do.	Daresama Wood,	தெரிசினமரம்	దరిశెన మాను	

MADRAS RAILWAY AGENCY OFFICE,
17th June, 1854.

(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 151.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter, No. 203, of the 17th Instant, I have the honor to observe that the wood called Dyospiros Ebenaster is already included in the list of authorized woods, being, according to Ainslie, the Aucha wood well known at Madras. What may be the botanical name of the wood supplied by Mr. Sullivan as Katavye, I known not; but I do not believe it to be at all similar to the Aucha.

I think you may, with safety, add to your list the Karvalum (Acasia Arabica), the Katavye, and the Dud Eloopay, (Bassia Langifolia).

There seems to be more misunderstanding, in the application of the term Ebony, to some of these woods, than in that of any other name. Ainslie applies it, I think, exclusively to Aucha, which is certainly not the same as Katavye.

I think it would be sufficient, for the present, to add to your list the above three kinds of woods; but I would request the Chief Engineer, as suggested in my letter of the 14th June 1854, No. 132, to purchase samples of any promising kind of woods, and lay them down, carefully marked, for experiment. Of course great care will be requisite in determining the proper names, both native, and (if possible) botanical, of such samples.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
30*th June*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
9*th June*, 1854.

No. 184.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to the accompanying copy of a letter from the Chief Engineer of the Railway, I have the honor to request your opinion whether purchases of Sleepers may be made by the Engineers. (11th March, 1854.)

2. Contractors are coming forward very slowly, and it seems therefore advisable to try some other plan for obtaining Sleepers. Mr. Bruce's suggestion might perhaps be tried for a certain time under certain rules. The number of Sleepers to be received at any one time should be fixed at—say—not less than 300. The price should be, in each District, with reference to the distance from which the Timber must be brought. After examination by the Engineer a report should be immediately made to the Chief Engineer, and forwarded to the Agent, by whom it will be submitted for the sanction of Government. A list, of the different kinds of timber approved of, should be furnished to each Engineer, and to which his purchases should be strictly confined. In the event of new kinds of timber being offered, a special report should be made, but no purchase effected. If upon inquiry it was proved good, it might be added to the approved list. In every case one-tenth of the price should be retained for six months, within which period the seller should engage to replace any unsound Sleeper.

3. The plan may not be free from objection, but in a country where there is no commercial enterprise, little capital and no competition, it may be well to try a new system.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 11th March, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

There have been offers made to supply Sleepers in small quantities on our line by Villagers, who cut their own timber, and use their own bandies.

It occurs to me, that if a discretionary power was granted to the Engineers to purchase Sleepers brought in this way, at the lowest price obtainable, and within certain limits, we should be able to engage more people in the work of supplying Sleepers, and procure some probably at less than the usual rate.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 132.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 184, of the 9th Instant, with its enclosures, containing a proposal from the Chief Engineer, that the Officers of his Department should, as occasions offered, purchase Sleepers.

I think it desirable, under existing circumstances, that they should do so, but it should be, as you observe, under certain rules.

I consider that it is neither necessary nor desirable that the Engineers should enter into any contract whatever for the supply of Sleepers, without previous reference to yourself; but they might receive and pay for any Sleepers, of the authorized woods, offered to them.

It would be better that they should do this, as your Agents, forwarding statement of Sleepers purchased; to be entered in your records, not entering their cost in the Construction Account, but receiving payment from you, giving you the usual receipt for the Sleepers, as stores.

This would tend to obviate all chance of confusion, in the expenditure on this particular account.

Their purchase should, as a general rule, be confined to the authorized woods; but they should be at liberty to purchase sample Sleepers for experiment, carefully ascertaining their real names, and qualities, and placing special marks upon them for distinction and for record. I would not limit them, as to price, as they will doubtless do their best to get them cheap; and will find that on no portion of the line, will they cost as much as they have here, viz., Rupees 3-4 each.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
14*th June*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
16*th June*, 1854.

No. 199.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to the accompanying Extract of a letter from the Board of Directors, dated 20th March last, I have the honor to request permission to purchase four or five thousand Teak Sleepers, if I can obtain them at a cost of about Rupees 4½ each. I must use great caution; as the price will be immediately raised, if it is known the Railway Company require Teak timber. We shall be able to compare Teak with other timber, and it may be found so far superior to other wood, as to be, in reality, cheaper. I think, however, that there are many woods of this part of the country, much cheaper, and of undoubted good quality. You will observe, perhaps with surprise, the opinion expressed in regard to Saul timber. The Gogalum which we have received through the Contractor from Ganjam is, I believe, excellent wood.

2. I have also to request sanction for a further sum of Rupees 30,000 on account of Sleepers.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Extract of a letter from the Board of Directors, dated 20th March, 1854, *No.* 19.

With reference, however, to your remark that, therefore, the intention of using Teak for Sleepers must be given up, but that there are in your quarter many woods which will answer equally well, it appears to the Board that as experience only can determine this most important point, and as its results in Bengal, so far as we can learn, have proved the very inferior durability of one hard wood at least, Saul, in comparison with Teak for this purpose, it would be unwise to relax in our endeavors to obtain as large supplies of Teak Sleepers as possible, from all available sources, even at some greater increase of price over others than you appear hitherto to have been allowing. Sleepers of Teak, and of other woods obtained by you, seems to run about a 3¼ or 3¾ Rupee per Sleeper only; but on this point the Board are desirous of more specific information, and wish you to furnish them with a return of all Sleepers you have received, or contracted for, showing the description of wood, and the price in each case.

(True Extract.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 139.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter, No. 199, of the 16th Instant, I have the honor to convey to you the sanction of Government, for the purchase of 4 or 5 thousand approved Teak Sleepers, if such can be procured at a price not exceeding Rupees 4½ the Sleeper.

I shall feel obliged by your making your application for further advance on account of Sleepers, the subject of a separate communication, for submission to Government.

I have, &c.

MADRAS, 21st June, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 37.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

The Board of Railway Directors, in a letter to their Agent, from which that gentleman has favored me with an Extract, allude to the results in Bengal having shown the inferior durability of Saul wood. I have the honor to request that Government will be pleased to cause a reference to be made to Bengal, with a view of ascertaining what the experience of the Railway men has been—to what extent Saul has been used for Sleepers—under what circumstances applied—what the results—and, to whatever extent they may have failed, to what such failure is attributed.

I have, &c.,

MADRAS, 22d June, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 7.

TO THE SECRETARY TO THE GOVERNMENT OF BENGAL.

SIR,

I am directed by the Right Honorable the Governor-in-Council to annex a copy of a letter from the Consulting Engineer for Railways, and to request that the information therein required respecting the use of Saul wood as Railway Sleepers in Bengal

and the results attending it, may, with the permission of the Honorable the Lieut. Governor be obtained, and furnished for communication to that Officer.

I have, &c.,

FORT SAINT GEORGE, 24th June, 1854.

(Signed) H. C. MONTGOMERY,
Chief Secretary.

(True Copy.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways;
for information.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 262.

Extract from the Minutes of Consultation, dated 14*th December,* 1854.

Read the following letter.

FROM C. ALLEN, ESQUIRE,
Offg. Secretary to the Govt. of India.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government,
Fort St. George.

SIR,

In reply to your letter, No. 7, dated the 24th of June last, I am directed to forward the accompanying Copy of a communication from Mr. G. Turnbull, Railway Engineer, dated the 11th Instant, to the address of the Managing Director and Agent of the East India Railway Company, containing information as to the durability of Indian woods used as Railway Sleepers in Bengal.

I have the honor to be, &c.,

FORT WILLIAM, *The 29th November,* 1854.

(Signed) C. ALLEN,
Offg. Secretary to the Govt. of India.

EAST INDIA RAILWAY,
Howrah, 11*th November,* 1854.

DEAR SIR,

With reference to the several inquiries, which have been made, as to the durability of Indian woods, used as Sleepers, and also with reference to the success or otherwise of the creosoting apparatus, I have to offer the following remarks.

2. The annexed Memorandum of timber on trial for Sleepers deserves some attention. The three first specimens were of Fir wood brought out from London in the end of 1850, nearly four years ago. These are the earliest specimens. Those which are creosoted, and those prepared by Marjary's patent (Sulph. Copper) are still in the Railway, in a sound state.

3. The rest of the table shows that the Saul specimens are decayed only in the Sap-wood: Iron wood sound: New Zealand, soft wood, decayed; Pine, unprepared, is quite rotten: Teak quite sound: New Zealand Cowdie, a hard wood, quite sound: Swan River red wood, quite sound: this is an excellent kind of wood; it has a slightly pungent swell when fresh cut, is lighter than Saul, and a Sleeper more easily handled: Gum wood

from Swan river durable—Thengan, from Moulmein, durable—this seems a very valuable timber, it is considered by the Burmese nearly as good as Teak (see Dr. Falconer's Report on Tenasserim Forests quoting Dr. Wallich, p. 66).

4. I have now to refer to the large quantities of Sal wood, creosoted fir, and other kind already laid down, and in use on the Railway; the results of the trial of which are much more important than any experiments with individual specimens.

The results may be summed up in a very few words.

5. 1st. That the few Teak wood Sleepers, which we have been enabled to lay down, are perfectly sound as at first.

6. 2d. Sal wood Sleepers, of which we have the largest proportion, are, after being a little time in the ballast, quite decayed as far as the Sap wood extends: not only do the white ants attack the Sap wood, but it perishes by natural decay. I have not however as yet met with any instance of the heart, or real wood, of Sal being injured by white ants, far less by natural decay; I refer in this remark to Sleepers only, as I have had frequently to observe the timbers of houses, both Sal and Teak, destroyed by white ants, in all parts.

7. I have examined some thousand of Sleepers in the works within the last few weeks, and found that the Sal Sleepers, which had a square cross section, and little or no Sap wood are in a satisfactory state, no decay being observable: on the contrary, those which are of a semicircular cross section, that is two Sleepers made by sawing up a tree about 12 inches diameter—and where there is much sap wood, are in a bad condition. The Sap wood being quite destroyed, some, which are of smaller wood than usual, that is, cut of logs 10 inches diameter, are nearly unserviceable.

8. It is objected to the Sal Sleepers, that they are so heavy, compared with Fir, and other woods, that there is an extra expense on that account in first laying down the road, and also in the maintenance, especially in our new embankments, where constant lifting is necessary on the passage of trains, and will probably be necessary for some time to come, or until the embankments become well consolidated. I do not attach much weight to this objection; because a large heavy Sleeper of tough durable wood which is, I believe, stronger than any other known wood, as regards resistance to transverse fracture, and which is procurable in India to any amount, possesses counterbalancing advantages of greater importance.

9. Of creosoted Fir Sleepers I have to report favourably. Some, of a rectangular cross section, have been laid down about three years and are at present quite sound. The heat of the sun, and great drought in this country, for a long period, have an evident effect in dissipating volatile parts of the creosote; so that the peculiar odour of creosote is scarcely discernable in Sleepers, after exposure in the sun: nevertheless, the fact remains that the white ant does not molest them, and they have not as yet suffered from decay. It is of importance that they should be protected from the direct rays of the sun, until they are covered with ballast. Some of these, which are of triangular cross section work and are liable to split, in the hot weather, the fine edges of the Sleepers becoming also dry and brittle. For this reason I would give the preference to the rectangular cross section, although the dimensions be only 10 inches by 5 inches.

10. Fir timber in India is notoriously liable to decay, probably owing to the heat causing the turpentine, &c., to evaporate. The wood by and bye has the appearance of a piece of cork, when fractured, losing its tenacity and strength. I am not prepared to affirm that creosote remedies this entirely, but that it does so to a certain extent there can be no doubt. A creosote Fir Sleeper, after long exposure in the sun, is untouched by the ants and to every appearance is sound; but that some alteration has taken place is

evident from the surface coating being dried up, and nearly gone, and when broken across, the fractured part has not that fibrous appearance possessed by freshly imported timber.

11. On this subject the Resident Engineer of the Raneegunge District, 36 miles in length, writes as follows :—

"In reply to your letter of 29th July, requesting to know what I have observed with regard to the wear of the wood Sleepers, I have been frequently up and down the line lately and have not observed that the Sleepers are any where attacked by the white ants, neither those of Sal wood, nor those of creosoted Fir (of the former however we have only about 1,500 in the roads) neither has Mr. Rutter. Many of the Fir Sleepers twisted and split a good deal while they were exposed in the road after they were fastened, which was during the hottest and driest weather; but I do not observe that to take place to such an extent now.

"On the whole, the wood Sleepers, particularly the Sal wood, which are so much more bulky than the others, appear to me to be nearly in as good preservation as when first laid down."

12. About two years ago 1,000 Sleepers of Fir wood, prepared by Sir W. Burnett's patent process, with Chloride of Zinc, were delivered in Calcutta. I had them all laid down near Pundooah in one place. I examined them about 10 days ago, and found them all sound, and in as perfect a condition as when first landed. From this, and from the results of experiments made in Fort William, some years ago, by steeping timber in the solution without employing pressure. I am led to form a high opinion of Chloride of Zinc as a preservation.

13. Some Sissoo Sleepers have been laid down at various places; this is an excellent strong durable wood but of limited quantity. The Sap wood soon perishes, but the real wood is durable: some few were creosoted, but the greater proportion were unprepared. They are all in a sound state, as when laid down, except the Sap wood which is quite decayed.

Creosoting Apparatus.

14. This apparatus is now in a perfect working condition: it is altogether an excellent piece of workmanship, and reflects credit on the makers, Messrs. James Burton and Son of London: it has cost little or nothing for repairs since it was first put together. The cost of the apparatus delivered in Calcutta was £2,010.

15. Some time ago I requested Mr. White to make some experiments, to ascertain what woods would take the creosote best; and what quantity they would imbibe per Cubic foot. The following Tabular Statement is the result:

Name of Wood.	Cubic Contents.		Quantity of Creosote imbibed per cubic foot.	Remarks.
	Feet.	Inches.		
Fir Sleepers,....................	2	7	91 lbs.	These Sleepers came from England creosoted.
Do.	2	6	22 "	
Sissoo,....................	2	4¼	9 "	
Sal, ...	1	10½	2 "	
Soondrie	2	8	6 "	
Iron Wood,....................	5	0	4½ "	
Teak,....................	2	3	4 "	
Wood from Swan River, name unknown,....................	6	2½	11 "	
Mahogany,....................	5	4	4 "	

From the above, it will be seen that Sal imbibed less proportion, than any other wood.

16. The following is an account of the cost of creosoting Sleepers for one week at Ballic Khal.

	Rs.	A.	P.
Loading and unloading 1,800 Sleepers at per 0/0, 1/9/0................	28	2	0
Coal 48 Maunds at per Maund 0/6,.............	18	0	0
72 Coolies emptying liquor and carrying wood and water at per each 0/2/6 0/2½,................	11	4	0
Fireman's Wages,...	1	0	0
Durwan's do.	1	0	0
Superintendent's Wages,..	12	0	0
Jute Oil and Emery Paper for Engine,................................	2	0	0
1,800 Sleepers, Rupees...	73	6	0

Per 1,000 Sleepers, Rupees 40-12-7, or per Sleeper 7·831 Pie = 1*d.* nearly.

17. The total quantity of creosote delivered, I understand to be, 84,500 Gallons; and the average cost, including Freight, Insurance, and other charges, amounts to 6¼*d.* per gallon very nearly; this price is exclusive of the price of the wrought iron tanks which contained the creosote; these have been found very useful as water cisterns at the stations; and many more could be disposed of in the same manner.

18. Taking then the creosote at 6¼*d.* a gallon, and that a gallon of creosote weighs 8 lbs. which is very near the truth; also assuming a Sleeper 10 feet long, 10 inches broad, and 5 inches thick, containing close upon 3½ cubic feet of timber, we have the cost of creosoting Sleepers as follows:

Sal	2 lbs.	creosote per foot	× 3½	=	7 lbs.	per Sleeper.
Teak	4 „	do.	× 3½	=	14 „	do.
Soondry	6 „	do.	× 3½	=	21 „	do.
Sissoo	9 „	do.	× 3½	=	3½ „	do.

Again,

Sal	Sleeper	7 lbs.	creosote	at 6¼*d.*	a Gallon	=	5½*d.*
Teak	„	14 „	do.	at „	do.	=	11*d.*
Soondry	„	21 „	do.	at „	do.	=	1/4½*d.*
Sissoo	„	31½ „	do.	at „	do.	=	2/0½*d.*

Adding 1*d.* a Sleeper as above for labour, &c., the cost of creosoting will be for a

Sal	Sleeper	6½*d*
Teak	do.	1/
Soondry	do.	1/5½
Sissoo	do.	2/1½

This is exclusive of the original cost of the apparatus, of which the amount chargeable on each Sleeper, of course diminishes, as the number of Sleepers increases.

19. I shall be enabled, soon, to furnish you with another statement, as to the quantity imbibed by square timber: and how far the creosote has penetrated into it. Hitherto it has been difficult to arrive at it, as the charges have been composed of a great variety of scantlings, of small size, and of Sleepers, of all kinds, of shape and size.

I am, &c.

(Signed) GEORGE TURNBULL.

To R. M. STEPHENSON, Esquire.

(True Copy.)

(Signed) R. M. STEPHENSON,
Managing Director and Agent.

Called for in reference to correspondence from Madras forwarded to me with Docket, No. 720, dated 7th July, 1854, from Home Department.

(Signed) W. E. BAKER, Lieut. Col.
Consulting Engineer to Government,
23d November, 1854.

C. ALLEN, Esquire,
Secretary to Government of India.

(True Copy.)
(Signed) C. ALLEN,
Officiating Secretary to the Government of India.

Ordered to be communicated to the Consulting Engineer, with reference to his letter, dated 22d June, 1854, No. 87.

(True Extract and Copies.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To Lieut. Col. T. T. PEARS, c. b.,
Consulting Engineer for Railways.

Railway Department,
Consulting Engineer's Office.

No. 119.

From Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

In forwarding to you the accompanying Copy of an order of Government, I have the honor to convey to you authority for receiving and paying for such of the Sleepers named in the list forwarded with your letter of the 10th May, 1854, or shall have been passed by the Chief Engineer, being woods named in the original agreement with the Contractor in question.

No. 114, dated 23d May 1854.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras,
31*st May,* 1854.

Madras Railway Agency Office,
5th June, 1854.

No. 179.

From EDWARD SMALLEY, Esquire,
Agent.

To Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

Sir,

With reference to your letter of the 31st Ultimo, No. 119, forwarding copy of an order of Government, dated 23d Ultimo, No. 114, and to that of the 1st Instant, No. 123, I have the honor to observe that it was certainly wrong on the part of the Contractors Arnagherry Moodelly and Yedul Roy Lalah to have produced Sleepers of woods, other than those mentioned in the specification, and sanctioned by Government. But, as it appears, as observed in my letters of the 10th, 12th and 23d Ultimo, that there actually exists difficulty in procuring Sleepers, to the enormous extent which we require, of

timbers mentioned in the specification and as the 5th para. of the specification provides for the Sleepers being of very strong and durable timber; the Contractors have presumed, to save time, to produce Sleepers of woods which though not specified are pronounced by the Resident Engineer, Mr. Wilson, and by experienced Carpenters of Vellore, to be good.

2. The Contractors have been strictly warned to adhere to the provisions of their contracts in future.

3. In order to secure a supply of Sleepers, it is necessary to show some encouragement to the Contractors, and as the Provisions of Paras. 7 and 9 of the specification for the former contracts provide for the payment of the Sleepers by the Company, on the same being passed by their Engineer, and as in the present instance the Sleepers were examined and pronounced by the Company's Engineers to be good ones, I beg to recommend for the favorable consideration of Government the propriety of sanctioning the admission of Sleepers of woods which on examination appear to be good.

4. I have the honor to forward two petitions, from the two Contractors mentioned above, proposing to receive nine-tenths of the value of the approved timber, and one half only of the Sleepers which are considered of doubtful quality, as per Memorandum accompanying. They propose to allow the Sleepers to remain on trial for six months, and to replace any which may have failed, and after that to receive the balance due to them. I hope that you will not consider the proposal unreasonable, and that you will recommend it for sanction. I am very anxious to secure good Sleepers for the Railway, but, at this time, I am also desirous to encourage native Contractors to proceed with confidence in a new undertaking in which they are to embark a considerable amount of capital. In course of time we shall, no doubt, ascertain all the good kinds of timber which are suited for Railway purposes. We have hitherto had much difficulty to contend with.

I have, &c.
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
13*th June*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

To EDWARD SMALLEY, ESQUIRE,
Agent, Madras Railway Company.

SIR,

I beg to inform you that out of 1,000 Sleepers delivered by me of different new woods I am prepared to receive nine-tenths of the price of those Sleepers which were approved, and one half of the price of 180 Sleepers whose quality is doubtful. At the expiration of six months, after the date of the delivery of the same, if the said Sleepers were found sound and uninjured the balance should be paid to me, but if any of them become injured by Worms, or White Ants, I will replace the same and then the balance ought to be paid to me.

MADRAS,
3*d June*, 1854.

I beg to remain, &c.
(Signed) C. ARNAGHERRY MOODELLY.

To EDWARD SMALLEY, ESQUIRE,
Agent, Madras Railway Company.

SIR,

I beg to inform you that out of 2,000 Sleepers delivered by me of different new

woods I am prepared to receive nine-tenths of the price of those Sleepers which were approved, and one-half of the price of 175 Sleepers whose quality is doubtful. At the expiration of six months, after the date of the delivery of the same, if the said Sleepers were found sound and uninjured, the balance should be paid to me, but if any of them become injured by Worms, or White Ants, I will replace the same and then the balance ought to be paid to me.

MADRAS, 3d June, 1854.

I beg to remain, &c.

(Signed) YEDULROY LALAH.

Statement showing the particulars of woods of Sleepers by the undermentioned Contractors.

	Arnagherry Modelly.	Yedulroy Lalah.	Remarks.
Sleepers supplied of woods mentioned in the specification,...............	28	227	
Do. of woods not mentioned in do. but pronounced by the Resident Engineer and the Vellore Carpenters as good,...	566	1,426	
Sleepers of woods as above mentioned and pronounced by the Resident Engineer to be good, and by the Vellore Carpenters as not very good,........	226	172*	* The Contractors dispute that only a portion of these Sleepers are of Pagoda wood, the remainder are of either Paulay or Pagoda wood.
	820	1,825	
Sleepers of woods pronounced by the Resident Engineer as good, and by the Vellore Carpenters as bad,.......	180	175†	† The Contractors agree to receive one half of the price of these at present, and remainder after six months.
Total...	1,000	2,000	

5th June, 1854.

(Signed) E. SMALLEY,
Agent.

On a letter (No. 179) from the Agent of the Madras Railway Company, dated 5th June, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

I regret that I cannot concur in the views expressed by the Agent in the accompanying letter.

2. The number of Sleepers involved in the present discussion is about 2,000; an amount too insignificant to affect the question, which is one of justice as well as policy.

3. In observing (para. 1) that the 5th para. of the specification provides for the Sleepers being of any strong and durable timber, the Agent so expresses himself as to make it appear that the Contractors were at liberty to bring woods other than those contracted for, which is not the case; the same para. going on to say "parties tendering will be required to name the woods," &c. They were at liberty to tender "any strong and durable woods," not to bring such woods unless in their contract.

4. The Agent speaks of his desire to encourage the native Contractors. The measure now proposed to me is any thing but an encouragement to the most desirable class of Contractors, but great encouragement to that disposition to false dealing and intrigue which too often characterize this class of men. Nothing short of the plainest speaking and plainest dealing will ever improve their habit in this respect, or prevent the many subordinate Agents connected with public offices turning to their own account any apparent opening for the exercise of favor.

5. The business of providing wood for Sleepers is a very important and difficult one, and requires the greatest care and circumspection. We sanctioned from the begin-

ning 17 descriptions of woods, many of them known to be abundant, and have now added several more. Something more than a mere inspection of a sample is required to assure us of the fitness of the wood, and no kind of supervision can be exercised over the expenditure of money in this department, and nothing but confusion in the assortment of the various kinds of woods (so essential to our future instruction and guidance) can ensue from the adoption of a system according to which the Resident Engineers are to accept any piece of wood that looks to them good; especially as they may occasionally be compelled to leave these inspections to others, and it must be observed that the Engineers themselves, as well as others employed on the line, can as yet have but a very limited acquaintance with the description and character of the several woods delivered to them. They must take the Contractors' word that the woods are what they represent, and the difficulty, arising from their want of local experience, of course increases as the number of woods, recognized as admissible, is augmented. I adhere therefore to the opinion expressed upon this subject in my report of the 16th May, 1854.

MADRAS, 13*th June*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 138.

Extract from the Minutes of Consultation, dated 27th June, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 13th June, 1854.)

1. The Government agree in the views expressed by Major Pears in the foregoing report on the Agent's letter of the 5th Instant, respecting Contractors supplying woods of a kind not entered in their contract, and regret that they cannot sanction the proposal submitted by the Agent, with respect to the Sleepers produced by Arnagherry Modelly and Yedulroy Lalah.

2. At the same time, care should be taken to place on any future Lists every description of timber which is known to be likely to suit Railway purposes; and, with this view, regular trials of woods should be made as soon as possible by some Department engaged in Public Works. Major Pears will state where and how these trials may be best carried out.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
21*st June,* 1854.

No. 206.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

14th June, 1854.

1. I have the honor to submit Copy of a letter from Mr. G. Williams, who has already supplied the Railway Company with some

19th June, 1854. Sleepers, proposing to enter into a new contract, together with copy of a letter from the Chief Engineer conveying his opinion upon the offer.

2. The Gogalum, or Saul timber, may be a better wood than the descriptions for which we have contracted at Madras with certain natives, but we could not allow Mr. Williams 4 Rupees per Sleeper, while we are paying other Contractors only 3¼ or 3⅛ Rupees. I should be very glad to encourage Mr. Williams, but I think his present offer cannot be accepted.

3. I beg to transmit copy of a reply, which I propose, with your sanction, to send to Mr. Williams.

4. It is necessary to think of saving time as well as saving money; and I am very anxious to secure a supply of Sleepers for the 1st portion of the line. This would induce me to deal liberally with an active person like Mr. Williams, but I must not discourage the native Contracters who are content with smaller profits. But on the one hand their supplies are small, and, from many causes, uncertain.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Mr. G. WILLIAMS.

SIR,

1. I beg to acknowledge the receipt of your letter of the 14th Instant, proposing to supply the Railway Company with 30,000 Sleepers in addition to your present contract, within April, 1856, at 4 Rupees a Sleeper of the same wood, viz.: Saul, already supplied, and requiring an advance of Rupees 50,000.

2. The price per Sleeper and the period within which the Sleepers are to be delivered are both objectionable, and cannot be accepted, but there would be no difficulty as to making you an advance of cash, if Messrs. Arbuthnot & Co. will guarantee the repayment. We require Sleepers by the end of March, 1855.

3. With respect to the 9,000 logs now lying at Goonapoor, and which would make at least, 18,000 Sleepers, I should be glad to purchase them at a fair price, which must be specified, if delivered ready for shipment at Ganjam, provided I can obtain freight, and that you will engage to see them shipped. For the latter agency I should be prepared to remunerate you either at so much per log, or by a sum, for the performance of the duty, which you may propose for sanction. It may be necessary to add that I could not engage freight until I am informed that the 9,000 logs are actually delivered at Ganjam, and ready for shipment.

(Signed) E. SMALLEY.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
19*th June,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer,

TO EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of Mr. William's Tender for the supply of 30,000 Saul Sleepers.

2. The price named and the condition appended, viz., an advance of Rupees 50,000, I think prevent his offer from being entertained.

3. Mr. Williams has all along been crippled for want of Capital, and, though an industrious man, has in consequence not been able to carry out his contract.

4. The best arrangement we could make would, I think, be to employ Mr. Williams as an Agent and send him up to those Forests to procure Sleepers. I am afraid we will never get them without some such arrangement.

5. To buy the wood lying in the Jungle is out of the question.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 144.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 206, of the 21st Instant, forwarding a copy of a letter from Mr. Williams, tendering Sleepers upon certain terms, and also copy of a letter, conveying the opinion of Mr. Bruce thereon.

I concur entirely in your opinion that Mr. Williams' tender of Sleepers, at 4 Rupees, should not be accepted. The reply which you propose to make to Mr. Williams, and copy of which accompanied your letter, appears to me perfectly judicious.

It appears that much might be done, towards getting a supply of Sleepers from the Cuttack forests, by adopting the plan which you have now under consideration, in regard to these 9,000 logs, i. e. by purchasing them *there*, and relieving the contractors of the difficulty of getting tonnage for them. In such a case, however, you would have to send a competent person to pass and receive them *there*. I would not recommend any large engagement for Saul wood at present, nor until a reply shall have been received to an inquiry, which I have made to the authorities in Bengal, regarding the behaviour of this wood, as far as it has been proved, on the East Indian Railway.

I have, &c.,

MADRAS, *26th June*, 1854.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
11th July, 1854.

No. 230.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

10th July, 1854.

1. I have the honor to forward copy of a letter from Mr. Williams, with reference to my letter to your address of the 21st June, No. 206.

2. I propose now, with your sanction, to call upon Mr. Williams to complete his first contract, of which about 22,000 Sleepers remain to be delivered, and after that to permit him to supply 18,000 Sleepers, of the same description at the same price, provided he engages to complete the delivery at Madras by the 31st March next.

3. It will be better, I think, not to make any further contract beyond what I have suggested for Saul timber at present, nor to enter into any engagement for 1856.

4. Mr. Williams, as a spirited Contractor, deserves some encouragement, and I am therefore disposed to recommend that an advance of Rs. 50,000 be made to him, under a guarantee from Messrs. Arbuthnot and Co. The price of the Sleepers should be deducted from the advance as they are received. With this view, I beg to enclose an Indent on the Treasury for early sanction.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 11*th July*, 1854.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS, 10*th July*, 1854.

To E. SMALLEY, ESQUIRE,
Agent, Madras Railway,
Madras.

SIR,

I beg to acknowledge receipt of your letter of 27th June. As you are willing to advance me 50,000 Rupees, on Messrs. Arbuthnot and Co.'s guarantee, I beg you will kindly obtain sanction for that amount being advanced at once, and Messrs. Arbuthnot and Co. are prepared, on receipt of a Cheque, if you will be so good as make it payable to them, to send you the requisite document promising to return you the money in case I do not deliver the Sleepers.

My position, with respect to the freight on any timber which I have to bring for the Railway, is now somewhat altered for the better, and it will be sufficient for me, if you will merely agree to take what wood I may bring above the number of Sleepers required to fulfil my contract, provided I gave them at the same rate, and brought the additional 30,000 I tendered for, within 10 months from the date fixed for my present contract, or against January 1856, so as to give me two seasons of shipping.

I shall be able to give you the wood in Goonapoor, delivered on the Beach at Calingapatam and the mouth of the Chicacole river, for 3¼ Rupees a log of two Sleepers; and I shall be willing to manage the shipping for you.

I remain, &c.,
(Signed) G. WILLIAMS.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter (No. 230) from the Agent of the Madras Railway Company, dated 11th July, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent solicits authority for drawing a sum of Rupees 50,000, on account of,

Sleepers, proposing to make Mr. Williams, the Contractor, an advance to that extent. I quite concur in the view Mr. Smalley has taken of Mr. Williams' application. I think it just to him, as well as politic on the part of the Railway Company, to give him all reasonable assistance and encouragement. I would recommend, therefore, that the Agent be supplied with funds to make the advance, upon the guarantee of Messrs. Arbuthnot and Co., or other sufficient security.

MADRAS, 11*th July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 161.

Extract from the Minutes of Consultation, dated 18*th July*, 1854.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 11th July, 1854.)

Agreeably to the recommendation of the Consulting Engineer and the Agent of the Railway Company, the Right Honorable the Governor in Council authorizes the Sub-Treasurer to supply the Agent with funds to the amount of Rupees (50,000) fifty thousand, to be advanced to Mr. .G Williams, for the supply of Railway Sleepers; the advance being made upon the gaurantee of Mrs. Arbuthnot and Co., or other sufficient security furnished in due legal form.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 40.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

In the 2d para. of an Extract from Minutes of Consultation, as per margin, Government has been pleased to direct, with reference to the descriptions of wood made use of by the Railway Company in their permanent way, that regular trials of woods should be made, as soon as possible, by some department engaged in public works, and I am directed to state where and how these trials may be best carried out.

No. 138, dated 27th June, 1854.

2. I have the honor to report, with reference to the above order, that, in my opinion, these experiments can be best made by the Railway Engineer Department applying samples of the several woods, experimentally, to the very purpose for which they are required.

3. With this view I had already, prior to the receipt of the above order, addressed* the Agent upon the subject, suggesting that "the Engineers "should be at liberty to purchase sample Sleepers for experiment, carefully ascertaining real names and qualities, placing special marks upon them for distinction and for record."

* No. 132, dated 14th June, 1854.

4. The several kinds of authorized woods have each a special distinguishing number stamped upon them,- in order that the description of wood may be readily ascertained, in all cases of failure on the part of the Sleepers.

5. The experimental Sleepers will be similarly marked. The greatest difficulty, however, will, I believe, be found in determining the real names of the several woods delivered. I have called the attention of the Agent to the necessity of being very careful on this point; and I doubt not but the Engineers will in a short time, and with the experience they must necessarily acquire, grow familiar, more so than most men at present, with the appearance and quality of the better class of Jungle woods, of which so little is known at present.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
3d July, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 41.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

With reference to the order of Government, in the Financial (Railway) Department, No. 24, of 3d February last, I have the honor to submit the following observations upon the means which appear to be available, in this part of India, for the supply of Railway Sleepers.

2. There is abundance of timber to be had in various parts of this Presidency suited to our purpose. The difficulty, which we have hitherto experienced in obtaining it, arises from the defective nature of the roads, from the absence hitherto of any considerable demand, and consequently from the non-existence of any local timber trade, to which we might look for men of capital to undertake the supply.

3. The Forests generally found covering the hill sides in the Districts of Cuddapah, North Arcot, Salem, Coimbatore, Malabar and Canara, no less than those of the northern Districts of Ganjam and Cuttack, would furnish sufficient timber for all the Railways that are likely to be constructed in this part of India for many years to come.

4. Of the woods enumerated by Dr. Wight in a list, subsequently published in a separate form, sent to the Madras Committee for the Great Exhibition, many appear to be common to all these Districts.

5. The most striking charactéristic of the better sort among these woods are their closeness of grain and great weight.

6. It appears to be chiefly for these reasons, partly from the small size to which

many attain, and in some cases it is due to religious prejudices, that we find these strong and durable woods brought into so little use among the people of the country.

7. The wood chiefly used by Government is Teak. Teak is found in considerable quantities in Salem and Cuddapah but is considered inferior in quality. The Madras market is chiefly supplied from the Tenasserim Provinces and Pegue; while, for special purposes, this wood is occasionally brought across from the forests of Annamullay and the District of Coimbatore. Palmyra from Ceylon is also extensively used in this part of the Country, in the construction of light roofs.

8. The woods which appeared at first sight available for Sleepers were the Teak from Pegue and Moulmein; Saul from Cuttack; Jungle woods from North Arcot and Salem; and for the western extremity of the Madras line there could be no difficulty in getting an abundance of very fine wood of various kinds.

9. With strong durable woods of other descriptions at hand, it is not desirable that the better description of Teak on the Malabar Coast, so greatly valued for ship-building and other special Government purposes, should be used at all.

10. As the best mode of testing the practicability of obtaining Sleepers on the spot, the Agent for the Madras Railway, in the month of April 1853, invited Tenders for 90,000 deliverable, in definite quantities, at certain points on the line between Madras and Menil, 58 miles. This invitation had been little responded to up to the day fixed for opening the Tenders; a subsequent offer of a supply, at 3½ Rupees the Sleeper, having been accepted, several offers were made by different parties upon the same terms, and at the present time there are contracts out for 99,000.

11. It appears that of these a considerable number will come from Cuttack, some from the districts near Madras,—some from the Malabar Coast; though we may doubt, under present circumstances, whether many of the Contractors will not fail altogether.

12. In all cases the chief difficulty, at present, is found in the transport of the wood from the forest to the appointed place of delivery.

13. From the experience we have already gathered, I should say, Saul Sleepers may be procured, and brought down to the Coast near Ganjam, at a very moderate cost. The difficulty is to find tonnage for them to Madras at the proper season of the year. The Contractor who undertook to supply 30,000 from thence has, I believe, succeeded in collecting abundance at prices which appeared to promise profit, but, from the difficulty above mentioned, has failed in fulfilling his contract within the time specified.

14. In addition to the difficulty arising from the want of roads into and among the forests, we have, in the jungles of Cuddapah, North Arcot, and Salem, to contend with fever, which, more or less, prostrates nearly all, except the few local wood-cutters, who venture into them, or remain any time there. This is a very serious difficulty.

15. Mr. Sullivan, the Assistant Collector at Vellore, has, with great labour and good will, attempted to solve the problem of the practicability of obtaining good Sleepers in that neighbourhood at a moderate cost, by employing under his own orders and superintendence wood-cutters, Carts, Sawyers, &c., and has collected 2 or 3000 Sleepers of superior quality. Notwithstanding that the wood abounds—to be had for the asking—within distances varying from 40 to 100 miles from Vellore, no Sleeper has yet been turned out ready for use under 3 Rupees; few have cost less than Rupees 3½, some more. The difficulties are the cost of carriage, arising from the badness of the roads, the great weight of the wood, and the unhealthiness of the jungles which effectually prevent his sending Sawyers and Carpenters to the spot to trim the Sleeper where the tree is felled, and thus save the carriage of waste wood.

16. Of the quantity of timber of each variety available in these several districts my information is, I regret to say, very imperfect. The consumption, hitherto, has been very small; the woods in common use among the natives, for domestic and agricultural purposes, are remarkably durable. The forests are extensive, and there can be no doubt of there being a very large supply available; with a view of getting the best information upon this subject, I forwarded (through the Collectors) to the Tahsildars of the several Talooks in North Arcot, South Arcot, Salem, and Cuddapah, the districts within reach of the Railway, printed forms, requiring them to furnish certain information regarding the woods found in their districts. Their replies will be found in the Appendix. They are more or less complete, and are in many respects unsatisfactory, inconsistent, being carelessly drawn up in some cases, but, such as they are, I have considered it better to forward the genuine documents as giving us perhaps one step, though not a great one, toward the obtaining of sound information on this subject.

Appendix, A, B, C, D, E, F, G.

17. Of the many woods there mentioned I had opportunity of examining and testing specimens of several varieties, which appeared to be excellent and well suited to Railway purposes.

Appendix F.

18. Up to the present moment, the price, which the Madras Railway Company have agreed to pay, for Sleepers has been Rupees 3¼ each. This we may assume is the maximum; when the trade is opened, and Contractors have had some experience, we may reasonably expect that it will come down; even in this part of the line, as we enter the districts of Salem, and still more as we pass into Coimbatore and approach Malabar, the cost will fall very much.

19. In the mean time, it has been found that in many parts of the line stone blocks (granite) may be substituted with advantage, the Chief Engineer of the Railway having officially reported that they can be laid down, in one district, at a cost of Rupees 1-6-0 each, or Rupees 2-12-0 the pair.

20. Besides the papers now forwarded, there will be found in the Report to Government, noted in the margin, much information upon the subject.

From I. Rhodes, Esq., dated 14th April, 1853, also from W. Elliot, Esq., Commissioner of Northern Circars, dated 21st April, 1853.

21. I have collected specimens of what appear to be the most suitable descriptions of timber for our purpose among the local forests,—those of Salem, North Arcot, and Cuddapah. An opportunity might be taken, should Government think proper, of sending them up for the inspection of the authorities in Calcutta, as, when our Railway is open to Vellore, it is not impossible that these woods might come into use, even with the Bengal Railway.

I have, &c.,

MADRAS, 11*th July*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

P. S.—I have detained this report a considerable time in expectation of receiving from Mr. Sullivan, the Head Assistant Collector of North Arcot, a promised statement regarding the various description of useful woods found in that district. That information has been now received and will be found in the Appendix, and is specially valuable as being the result of careful enquiry into the subject.

(Signed) T. T. P.

List of papers accompanying the Report dated 11th July, 1854.

A.

Statement of different descriptions of useful woods grown in the different parts of the District of Cuddapah.

B.

Statement of different descriptions of useful woods grown in the different parts of the District of North Arcot.

C.

Do. Do. District South Arcot.

D.

Do. Do. Do. of Salem.

E.

General list of Woods.

F.

List of country and other woods which appear likely to answer well for Sleepers.

G.

Statement of various descriptions of woods found in the Districts of North Arcot and Salem, forwarded by Mr. Sullivan.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 169.

Extract from the Minutes of Consultation, dated 1st August, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 11th July 1854.)

1. Ordered that copies of the foregoing report, and of the papers which accompanied it, be transmitted to the Government of India, in continuation of the letter in this Department, dated 3d February 1854, No. 2, and that it be intimated to them that, if desired, the Specimens of timber, referred to in the concluding para. of the report, will be forwarded on requisition.

2. The Government notice with approbation the interest Mr. A. Sullivan, the Head Assistant Collector of North Arcot, has taken in the subject, and the valuable aid he has afforded the Railway Company in procuring timber for their use.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
18*th July,* 1854.

No. 237.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to forward the accompanying five tenders, with translations thereof, for the supply of 82,000 Sleepers at, or within ten miles on either side of, Trivallum, Paulghaut, and Tirtullay, respectively, and request you will submit the same for the sanction of Government.

To Chief Engineer 22d June 1854, No. 257.
From do. 27th do.
To do. 10th July, No. 276.

2. Copy of a Correspondence which has taken place between myself and the Chief Engineer on the subject is also forwarded.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
22d June, 1854.

No. 257.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,*
Chief Engineer.

SIR,

I have the honor to forward the accompanying copy and translations of Tender for the supply of 1,12,000 Sleepers at Trivalum, Coimbatore, Paulghaut, and Tirtullay, viz.

1.	Tender	from Kistnah Reddy, for the supply at Trivalum of Sleepers,......	15,000
1.	,,	from Moonesawmy Moodely, for the supply at, and within 10 Miles on either side of, do. of Sleepers,..................	15,000
		Total	30,000
1.	,,	from Bauloo Ñaik, for the supply at, and within 10 Miles on either side of, Coimbatore of Sleepers, ...	30,000
1.	,,	from Gooroo Bux Ram Sing Iyer, for the supply at Paulghaut of Sleepers,.....................................	7,000
1.	,,	from Sevaramah Sastry's Agent, Iyasawmy Moodely, and Venketupermal Naik, for the supply at, and within ten Miles on either side of, Paulghaut of Sleepers,.................	15,000
		Total	22,000
1.	,,	from do. do. for the supply at, and within ten Miles on either side of Tirtullay, of Sleepers,...........	30,000
		Total	1,12,000

2. The rate of 3 Rupees per Sleeper at Trivalum appears favourable.

3. Of the rates of Sleepers at Coimbatore, Paulghaut, and Tirtullay, you will be able, from your personal knowledge of those places, to offer a better opinion than I can.

4. The delivery of Sleepers as tendered by Gooroo Bux Ram Sing Iyer, of Paulghaut, is, you will observe, very slow and protracted.

5. I beg also to hand you two more tenders, from different parties, for the supply of Sleepers at Madras and Tirtullay, but the rates thereof, as well as the period of delivery, being both extravagant, they are, in my opinion, not worthy of consideration.

6. I request you will return the Tenders as early as possible with your opinion thereon.

7. The samples produced with each Tender are also forwarded herewith.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
27th June, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

Regarding the Tenders for Sleepers, forwarded with your letter, No. 257, I beg to offer the following observations.

Tender from Kistnah Reddy to deliver 15,000 Sleepers are all first class; and if so should, I think, be accepted.

Tender of Mooncsawmy Moodely.

The following woods are not in our list.

Murdah—Coombaudrce—Puchaputtay.—These judging from the samples, seem of doubtful quality.

Paulay.—This seems to be a hard heavy good wood.

I should exclude the three woods named above from the Tender; unless you know, from other sources, that the wood is good.

Tender of Bauloo Naik at Coimbatore. The woods not in our list are the following:

Murday.—This sample seems unexceptionable.

Valaumarum.—Ditto seems good wood.

Caraymarum, Cutchacutty.—I do not like the look of these two, and would strike them out of the list.

The price is high for Coimbatore; but it would be well to encourage the trade and make a beginning.

The number of third class Sleepers should be limited, say, to one-third of the whole.

Tender of Gooroo Bux Ramsing, of Palghaut.

The Teakwood, Blackwood, and Cedar, are at prices which place them out of the question.

The only other woods named in the Tender, which are included in our list, are Vangaymarum, Kurrahmurdah.

Judging from the samples, I should accept the Tender for woods named, except Munjacadumba and Chedechee.

Tender of Iyasawmy Moodelly, and Venctapermaul Naick, Agent for Sevaramsastry.

In this set of samples I should object to none but Wooloopay; the price is fair.

The same remark applies to the tender of these parties for the delivery of 30,000 Sleepers at within ten miles on either side of Tirtulla, excepting that the price is rather high; it would however be better, I think, to accept the Tender. They should all be first class at the price of 2-10 each Sleeper.

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

MADRAS RAILWAY AGENCY OFFICE,
10th July, 1854.

No. 276.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

In acknowledging the receipt of your letter of the 27th Ultimo, I have the honor, with respect to the three kinds of woods alluded to therein, as mentioned in the Tender of Moonoosawmy Moodely, to observe that Murdah is one of the seventeen woods originally enumerated in our specification, as No. 7, and that Coombaudree and Puchaputty are woods, pronounced by Vellore Carpenters of experience to be, of a superior quality; but the samples thereof, produced by the party, appear to be bad ones. He has been required to replace good ones, and they will be forwarded, as soon as I am in possession of the same.

2. The two woods Cauray and Cutchacuttay, mentioned in the Tender of Bauloo Naik of Coimbatore, will be dispensed with, and he will also be required to limit the supply of the third class Sleepers to one-third of the tendered quantity. The wood Murdah, mentioned in his Tender and alluded to in your letter under reply, is that No. 7, in our specification. I concur with you in opinion that the sample of wood Valagum is a good one. As the rate per Sleeper asked by this party is higher than that offered in a subsequent tender, received through Mr. Ross, he will be required to lower the rate, and until the receipt of reply to this, as well as to the subsequent tender, in regard of delivering Sleepers, as per Advertisement, at or within ten miles on either side of Coimbatore, these tenders will be deferred from submission to Government.

3. In the Tender of Gooroo Bux Ramsing Iyer, of Paulghaut, four of the woods mentioned therein are enumerated in our specification, viz., Vengay, Currah Murdoo, Pillay Murdoo, or Murthay, and Eroovaloo. After deducting these, as well as the three woods for which this party asks exorbitant rates, there remain four kinds, of which two, viz., Chedachee and Munja Cadumbay were condemned by you. Of the other two kinds the Venteak is equally objectionable, but the sample of Velagum is good.

4. In the Tender of Iyasawmy Moodely, Agent of Severamah Sastry and Venketapermal Naik, you approve of all the samples produced except Wooloopay. In this tender, in the woods specified, is also included the Cauray Marum, objected to by you, as above, while remarking on the samples produced with the Tender of Bauloo Naik. This difference of opinion is, I believe, owing to the bad quality of the small sample produced by his party. The wood Wooloopay, objected to by you from the sample, I have heard described as of a very durable character. It is my intention to request the Collector of Malabar to offer his opinion on the quality of this, as well as of Cauray and Velagum woods, above referred to; and should the result be favorable, it would be advisable, with your consent, to obtain sanction for adding them to our list, inasmuch as they tend to render facilities to the Contractors in procuring their supplies.

The Sleepers tendered by these parties, both at Paulghaut and Tirtullay, are all of the 1st class.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copies.)

(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 166.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 237, of the 18th Instant, enclosing five Tenders for Sleepers (82,000), and copies of correspondence with your Chief Engineer thereon.

In reply, I have to convey to you the authority of Government for accepting the whole of these Tenders, excluding certain woods in the following cases.

Tender of Moonesawmy Moodely of Trenamallay for 15,000 *Sleepers.*

Puchaputtay should be refused, not being among the authorized woods.

Tender of 15,000 *Sleepers by Kistnah Reddy.*

Neradee is not among the authorized woods.

Tender of 7,000 *Sleepers by Gooroo Bux Ramsing Iyer.*

Teak, Black and Cedar woods, should be rejected, the price being out of the question: the others, with the exception of Vangay, Curray Murday, Eroovaloo, and Pullamaradoo, assuming this latter to be the same as Maruday Marum, should be also rejected, leaving the above four woods to be accepted at two Rupees, a high price for that neighbourhood.

Tender of 30,000 *Sleepers by T. Vencatperaomal Naik, of Madras.*

Of woods tendered, Caray Marum and Wooloopay should be rejected, until we know more about them. The price is very high, but it may be well to accept it, and get the business opened up.

Tender of 15,000 *Sleepers by P. Iyasawmy Moodely, Agent of G. Sevarama Sastry and T. Vencataperoomal Naik, of Madras.*

From this Caray Marum and Wooloopay should be struck out.

I observe that in the translation of the Tender Moonoosawmy Moodely of Kanootie, the name of one of the woods, is rendered Ebony.

Seeing how generally the name is applied to various description of woods in this country, I think it would be better to adhere to the native name, giving, of course, if possible, the Botanical name at the same time.

In a list of woods which you were good enough to forward to me, on the 17th of June 1854, the Botanical name Diospiros Ebenaster is given to the wood Ebony, the various Tamil names of which are given as Karavallum, Katavallay and Katavye and the Teloogoo names "Tookey," "Ootae" and Karooty. I see Dr. Wight applies the name Ebony, on the authority of Ainslie, to Caat Attie, while in another place he distinctly applies the same to Toombie Marum, Diospiros Melanoxylon; and Aucha wood is referred to distinctly, both by him and Mr. Rohde, as Ebony.

It will be well to ascertain whether the wood called in Teloogoo Karooty is the same with that called by Dr. Wight Toombie Marum; and, if so, to introduce it into our list of woods under those names, and its true Botanical name Diospiros Melanoxylon.

I take this opportunity of suggesting that the two woods Paulay and Coombadree be added to your list of authorized woods, as Nos. 21 and 22.

The original tenders received with your letter are herewith returned.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP TUNGTORE,
26th July, 1854.

MADRAS RAILWAY AGENCY OFFICE,
2d June, 1854.

No. 175.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

Forwarded with a Memo. dated 5th May, 1854.

1. I have the honor to return Dr. Stanbrough's letter, to your address, offering to enter into a contract with the Railway Company for preserving Sleepers according to Kyan's method.

23d May, 1854.

2. I also forward transcript of a communication from the Chief Engineer of the Railway, declaring his having very little faith in the process, but recommending an experiment to be made with one or two thousand Sleepers.

3. I am averse to any expenditure upon mere experiments, and am opposed therefore to make any trial such as that recommended by Mr. Bruce.

Vide Min. of Cons. 24th November, 1853, No. 165.
9th December, 1854.

4. The subject of the means of preserving Sleepers was, I find, referred Home to the Court of Directors, by the Government for determination by the Board of Directors of the Railway Company. I had myself transmitted to the Board a copy of the order of Government, but have as yet heard nothing in respect to the matter. Believing creosote to be the best, and only well-known remedy for the preservation of Sleepers, I am on the point of writing to the Board suggesting the despatch of a quantity with the necessary Apparatus.

19th April, 1854.

5. I beg also to forward copy of a letter from Mr. Bruce, conveying a proposition from Mr. Flynn. He proposes to use a creosote compound, but I imagine that is a very different thing from the creosote prepared in England.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

P. S.—I intend sending to the Directors by this Mail a sample of Mr. Flynn's Creosote compound.

Submitted (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
24th June, 1854.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 23*d May*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of your letter, enclosing one from Dr. Stanbrough, regarding the Kyanising of Sleepers.

2. I have not much faith in the process, in so far as being a preventive of the attacks of white ants is concerned; but, as Dr. Stanbrough has the means of testing it, I think it would be advisable to make the experiment.

3. I should like to try, say, one or two thousand, on the terms stated by Dr. Stanbrough; but I do not think it would be advisable to enter into the contract for maintaining the Sleepers which he proposes.

4. It is necessary that Dr. Stanbrough should state how he proposes to secure the efficiency of his work, and how it is to be tested.

4. I ought to have mentioned, when writing regarding the creosote, that Mr. Flynn proposes to make his from wood, whereas that in use at Home is made from coal.

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 19*th April*, 1854.

FROM G. B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you a letter which I have received from Mr. Flynn, of Madras, offering to make and supply creosote for the use of the Railway Company.

2. The great difficulty in carrying out any process of preparation for Sleepers consists in the fact that we receive them from all parts of the country, and could not, without greatly increasing the cost, bring them all to one place to be impregnated.

3. This difficulty seems to me insurmountable: until the line is opened for some considerable distance.

4. If good creosote can be made, this is certainly a new feature in the case, and very materially removes the difficulty in the way of using this, probably, the most valuable of materials for the preservation of wood in this country.

5. It of course remains to be proved that the creosote is really good.

6. I would suggest that Mr. Flynn be requested to supply a sample of creosote, as he proposes to manufacture it, and that this be sent to England for examination.

7. If it is found to be really good, the Board, with the advice of their Consulting

Engineer, might probably think it advisable to go to the expense of sending out one or two Machines, for impregnating the Sleepers, to be fixed, say, one at Palghaut and one at Madras.

8. These would be partially useful during the construction of the line, and more extensively so after its completion, in creosoting Sleepers required for repairs.

I have, &c.

(Signed) G. B. BRUCE,

Chief Engineer.

MADRAS RAILWAY COMPANY,
Shervaroy Hills.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

Being under the impression that it would be advantageous to have the Sleepers of the Madras Railway creosoted, as is done in England, viz., by Beattie's process of impregnating the wood, by suitable Machinery, with a compound containing creosote and Pyrolignite of Iron in solution, I beg to tender for the supply of such a solution at the cost of four annas per gallon.

I beg further to state that if the Directors of the Railway Company would furnish me with the use of an exhausting and pumping machine, and let me know the number of Sleepers, on an average per day, they could guarantee me for work, the spot they would wish the wood to be creosoted, and the total amount of Sleepers they would for a certainty have to get cured, I may be able to enter into further arrangement, with them.

I have, &c.,

(Signed) G. W. FLYNN.

11*th April*, 1854.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

MADRAS, 4*th May*, 1854.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer Madras Railways.

SIR,

Having been given to understand that the Directors of the Madras Railway Company contemplate seasoning, or otherwise making durable, the wooden Sleepers, and other timbers about to be used on the Railway, I beg leave to offer a few remarks for the consideration of the Directors, with a view, should it meet with their approbation, of Kyanising or otherwise preparing the same.

Some such process has been found extremely advantageous when applied to the timbers, &c., in use on Railways in England. In this country, where not only the influence of climate has to be resisted, but where also the destructive effects of insects peculiar to India must be guarded against, means of preservation are obviously more necessary.

From information which I have been collecting for several months, and having personally visited and inspected the creosoting of the Sleepers for the Calcutta Railway, I am more than ever convinced that creosote, or any other unctuous liquid, is perfectly inapplicable for the purpose. Even with the powerful machinery used in Calcutta; and erected at a very great expense, it is a complete failure; for the liquid cannot be made to penetrate the wood more than an inch, or an inch and a half.

The creosoting or otherwise preparing Sleepers, without having previously extracted *all* sap and moisture, must necessarily be very injurious, as the moisture is *merely driven inwards*, thereby producing and hastening decay.

The Salt of Mercury, called corrosive sublimate, has a wonderful power in resisting decay, but requires care and circumspection in its application.

The artificial preservation of wood has been well considered, and reported upon, by those who have had the management of laying down wooden Sleepers for Railways, independently of the many scientific Chemists that have turned their attention to it. I will, however, quote a few lines from the report of Mr. Peter Barlow on the preservation of Sleepers on the S. E. Railway. He says "The only law I can trace in the decay of timber is, that where it is of good quality it will last longer *however* prepared, which is shown decidedly on the main line of S. E. Railway, where the Sleepers were *Kyanised;* these have been down eight years, and are in much better condition than the unprepared Sleepers on the branches, which have not been laid down more than four years."

It may be superfluous for me to say any thing after such an opinion as the above on the superiority of corrosive sublimate over all other preservative materials, but I am induced by circumstances to make a few remarks.

The expense of Kyanising Sleepers will be a large item, yet it will be found to be considerably cheaper than any other mode. Independently of its well-known preservative qualities, it is the only discovered preparation applied to our floors, matting, carpets, &c., for their preservation against the ravages of that destructive little animal the white ant.

On account of the clammy nature of the creosote, and its impracticability to penetrate the hard woods of India, any attempt for injecting it is out of the question, and again, with the view of producing impregnation, by steeping the Sleepers in boiling creosote or any other liquid, it has *always* the effect of diminishing the tenacity of wood.

The only mode therefore of making use of creosote effectually is to expose the Sleepers, in Cast Iron Chambers, to the action of its vapour, by means of applying heat by steam. This no doubt is an effectual way of preserving wood from decay, but is too complicated and expensive for general use.

With the exception of Chloride of Zinc, corrosive Sublimate is at present the only known preservative, which can be used without detriment to *all kinds* of woods.

The Pyrolignite of Iron is the next best, yet upon many woody fibres the acid exerts a most corrosive action.

However, after the practical report of Mr. P. Barlow little need be said.

In a pecuniary point of view the first expense is great, but, in the end, this first outlay will be found to be a profitable one, *and true economy.*

I can now only make known to the Directors and managers of the Madras Railway that I am erecting at Madras a suitable apparatus, for injecting wood with Kyan's, or Sir. W. Burnet's, solution, as used at the various Dock Yards in England, fitted with *exhausting* and *pressure* pumps, and worked by a Steam Engine, the whole of which machinery is nearly ready for the commencement of work.

I shall be prepared and willing to enter into a contract with the Company, for preserving their Sleepers and wood works, upon the following terms.

I need scarcely remark that unless the Sleepers are delivered as contracted for, viz., ten feet long, five inches, by six inches, it is impossible to give an accurate estimate; should this measurement be adhered to, allowing 14 Sleepers to a load, I

should be ready to undertake to Kyanise them at 10½ Rupees per load—otherwise, at the same rate *per measurement*—and to enter into a contract to keep the Rail line, viz., from Madras to Salem, 220 Miles, *when finished*, supplied with Kyanised renewed Sleepers for 10 *years* at 4 Rupees 8 Annas per Sleeper. I have thus briefly stated the grounds upon which I would propose to undertake a work of immediate necessity, to ensure the durability of the wood work upon the Railways about to be constructed.

Should these suggestions, and the terms upon which I am prepared to carry them into immediate execution, meet with your approval, I trust that my proposal may be laid before the Managing Committee supported by your recommendation.

I have, &c.,
(Signed) HENRY STANBROUGH.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 81.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To HENRY STANBROUGH, ESQUIRE.

SIR,

Your letter to my address, of the 4th May, having been referred to the Agent for the Madras Railway Company, has been received with that Gentleman's observations upon your proposal; but before offering any opinion myself upon the subject, I shall feel obliged if you will favour me with information on the following points, viz..:

1st. On what date you are prepared to commence upon the work, should the Railway Company determine upon agreeing to your terms for impregnating Sleepers after Kyan's Patent?

2nd. For what period you are prepared to guarantee timber so treated against decay, and against the effect of insects?

3rd. What number of Sleepers you are prepared to turn out, thus thoroughly impregnated, within a given time, say a month.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS, 6*th June*, 1854.

MADRAS, 12*th June*, 1854.

FROM H. STANBROUGH, ESQUIRE,

To MAJOR T. T PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter 6th Instant, requesting replies to the following questions, I have the honor to forward you the accompanying remarks.

Question 1*st*.—On what date you are prepared to commence upon the work should the Railway Company determine upon agreeing to your terms for impregnating Sleepers after Kyan's Patent.	*Answer* 1*st*.—Within a month, or six weeks, or even sooner; if shipping can be procured at Calcutta to bring down the remainder of my Machinery.

Question 2nd.—For what period you are prepared to guarantee the timber so treated against decay and against the effects of insects.

Answer 2nd.—With reference to the 2d question I am unable to furnish a conclusive answer as Kyanised Sleepers have not as yet been tried in India; but I would submit that there are sufficient grounds to conclude that Sleepers thus prepared may be with advantage used in this country. In support of this view, I would beg to recapitulate the statement contained in my letter dated 4th May in which a description of the result of Kyanised Sleepers on the South Eastern Railway was given, and great advantage of those Sleepers which had been thus prepared upwards of 8 years over the unprepared, and which had only been down 4 years was demonstrated. Millington says "no *recently* cut timber should be in contact with each other or *on the ground* as this is apt to produce decay or dry rot:" and again, "any thing that destroys the vegetative power of the wood will also remove the liability of this disorder:" and after enumerating tar, brine, &c. as preservatives further writes "but recent experiments that have been made in the Navy yard of Deptford, prove decisively that nothing yet tried is so efficacious as the solution of corrosive sublimate, since timber preserved with that material, and placed in damp, vaults in contact with the most vigorous dry rot, under the most favourable circumstances for contracting it was *not* effected." Andrew Parnell writes to the same effect and moreover says that although if external resinous or oleaginous covering by which air and water are effectually excluded, be applied to wood in a *dry* and *sound* state, perfect protection *might* be afforded, yet that decay is hastened by the impediment which the varnish offers to the evaporation of the moisture in recently cut timber. These remarks would appear particularly applicable to the condition of the Sleepers now laid down on the Madras Railway; these being perfectly green wood.

There is no doubt that Creosote or Pectoleum contains the requisite properties for the preservation of timber, if facilities for procuring it could be obtained; but as no shipping could be procured to take it from England to Calcutta, the Company were compelled although with powerful machinery at their command, to give it up and lay down their Sleepers unimpregnated.

Large quantities of Petroleum can be procured from Burmah, but independent of

the same difficulty and danger the expense of sending over tubs required to contain it, has likewise to be incurred.

This substance, we are aware, if applied to the bottoms of ships prevents ravages from worms and other insects.

Question 3rd.—What number of Sleepers you are prepared to turn out thus thoroughly impregnated within a given time, say a month?

Answer 3rd.—From 3 to 4000, or more if inducement was offered, after the arrival of the machinery, expected, as stated above, within a month or six weeks.

I have, &c.,

(Signed) H. STANBROUGH.

On a letter from the Agent of the Madras Railway Company No. 175, *dated 2d June,* 1854, *with Correspondence, viz.*

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. A proposal having been made by Dr. Stanbrough to treat the Sleepers of the Madras Railway with Corrosive sublimate or other preservative solution, the Agent expresses an opinion that it is not desirable to enter into any engagement for that purpose. Mr. Bruce the Chief Engineer considers that a trial should be made; though he has not much faith in the process.

2. Dr. Stanbrough's proposal is to enter into contract for Kyanising the Sleepers and wood work of the Railway Company at 10½ Rupees the load of 14 Sleepers. This brings the expense to 12 Annas the Sleeper or about 4 As. (6 Pence) the cubic foot. This cannot be considered unreasonable, nor is it (assuming that there are reasonable grounds for hoping that the results would be satisfactory) more than the value of the wood would justify our recommending.

3. The cost of these Sleepers has been hitherto Rupees 3¼. They are necessarily laid down green; and exposed, in a peculiar degree, to the effects of weather. The security against decay, no less than against insects, which would be afforded by having the timber subjected to some one of these well known processes would, in my opinion, be well worth 20 or 25 per cent. on their prime cost.

4. The Agent thinks Dr. Stanbrough's offer should not be accepted, because the matter has been under reference to England. The subject has been frequently alluded to in the correspondence with the Railway Directors; but I see no symptoms of any thing being determined upon, or done by them in this matter.

5. If it is desirable that expense should be incurred in thus preserving the wood, we should not, if we can help it, lay down a single Sleeper in its raw state; but should avail ourselves of every opportunity that offers of securing them against decay. That the Directors may send us out an Apparatus for the purpose, a year hence, is no reason why we should not, pending its arrival, avail ourselves of one ready to our hands.

6. I think, however, that the Directors would gladly in this instance, be spared the necessity of setting up their own machinery for the purpose.

7. One of the difficulties of carrying on large works in this country, to which allusion is frequently made, is the necessity of making all arrangements of this nature for ourselves. Here is a rare instance of an enterprizing individual setting up an Apparatus for a special and important purpose close to us; and I think, so long as his

terms are fair and reasonable, and his work satisfactory, that the Company would best consult their own interests by employing him.

8. I would not propose entering into any large or general contract with him, until the intentions of the Home authorities upon the subject are known; but I would certainly not recommend that a single Sleeper be laid down unprepared from the moment that we have within our reach the means of preparing them at a reasonable cost.

9. I would recommend therefore that the Agent be instructed to make use of Mr. Stanbrough's establishment for the purpose of preparing the Sleepers purchased for the Railway as they come in*: and I would also recommend, that in the first instance, some experiments be made with four different descriptions of materials, 2000 Sleepers being treated with each; viz.

* I allude of course to such only as are delivered at or near Madras.

Corrosive Sublimate.
Sulphate of Copper.
Chloride of Zinc.
Arsenite of Potash.

It would be of course necessary that the Agent should make enquiries as to the charge for each kind before entering into any agreement; and necessary also that there should be a clear understanding regarding the Engineers of the Railway having free access to the works, permission from time to time to test the solution, and some guarantee for the wood being sufficiently impregnated, as shewn by such Chemical tests as might be determined upon.

10. I am the more convinced of the expediency of acceding to Mr. Stanbrough's proposal from having observed that the Sleepers already laid down have shewn in some few cases symptoms of decay; and in very many more cases the effect of exposure on green wood has been to make them crack to an extent, that renders them hardly fit for the purpose for which they are intended.

11. Mr. Flynn's offer cannot, I conceive, be entertained; as it involves the setting up of all the necessary Apparatus by the Company; but the Creosote, if Mr. Flynn can supply it at a reasonable cost, might perhaps be tried experimentally in Mr. Stanbrough's vats.

12. I have myself great faith in the Corrosive sublimate for the present purpose. The only report I have on the subject is that of experiments made in 1836 by an Officer of Royal Engineers; and I find Mr. Faraday's opinion there quoted in favor of the process.

MADRAS, 24th June, 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To THE CHIEF SECRETARY TO GOVERNMENT, *Fort St. George.*

FINANCIAL (RAILWAY) DEPARTMENT.

No. 154.

Extract from the Minutes of Consultation, dated 11th July, 1854.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 24th June, 1854, No. 158.)

Para. 1. The Government consider it very advisable that experiments should be made with Kyan's process and the other preparations referred to in para. 9 of the Con-

sulting Engineer's report, for preserving Railway Sleepers, and they accordingly sanction the trial to a limited extent, in the manner and on the understanding proposed by Major Pears, provided he is satisfied that the experiments can be fairly and fully made by Dr. Stanbrough's establishment, and that Chemical tests can be applied to ascertain that the process has been perfect and thorough.

2. It must be borne in mind that Dr. Stanbrough has not been practically brought up to the business he offers to undertake; and that probably he cannot command a single workman who ever witnessed the proposed process of preparing wood.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To Major T. T. PEARS, C. B.,
Consulting Engineer for Railways.

Railway Department,
Consulting Engineer's Office.

No. 162.

From Major T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

I have the honor to forward for your information copy of my report to Government upon your letter No. 175 of the 2d June, 1854, with that of the order (as per margin) passed thereon.

Dated 15th July, 1854, No. 154.

Sanction is given to an experiment to a limited extent; and should the apparatus in process of erection by Dr. Stanbrough prove sufficient for the purpose, I would propose to you to try one or two thousand Sleepers, *i. e.* a few hundred of 5 or 6 different descriptions of wood. Being merely an experiment on a small scale it will not, I should imagine, be necessary to enter into any contract; but it would be desirable to take, among such other precautions, as your Chief Engineer may suggest, that of reserving to yourself or others appointed by you the right of examining and testing at pleasure the solution used, witnessing the process, and having, for the purpose of test and examination a piece of wood of sufficient dimensions of the same kind as that subjected to the process thrown in with the latter.

I shall feel obliged if you will inform me of the quantity of the several descriptions of wood you would propose to use in this experiment; and if you would at the same time ascertain from Dr. Stanbrough the exact nature and extent of his apparatus and the time at which he expects it will be brought into use.

I would suggest that you should have at least an equal number of Sleepers of the same description of woods as those subjected to the process, to lay down unprepared near to, and under similar circumstances with the latter.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Camp Paulaputty,
21st July, 1854.

MADRAS RAILWAY AGENCY OFFICE,
13th October, 1854.

No. 330.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

To Chief Engineer 1st August, 1854, No. 302.
From do. 16th do. do.
To Dr. Stanbrough, 30th do. No. 215.
From do. 31st do. do.
To Chief Engineer 18th September, No. 362.
From do. 26th do. do.

1. With reference to your letter of the 21st July last, No. 162, I have the honor to forward copy of a Correspondence relative to the proposal of Dr. Stanbrough to prepare Sleepers by the process of Kyanising for the use of the Railway.

2. It appears to me that if approved of, the best plan would be to request Dr. Stanbrough to make an experiment upon the payment of a fair remuneration for his trouble and expense, and that if successful, that is approved of by yourself and the Chief Engineer of the Railway, a contract for impregnating 20,000 Sleepers at a fixed price and within a specified time should be entered into.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
1st August, 1854.

No. 302.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

TO GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. Observation of Consulting Engineer 24th June, 1854.
2. Minutes of Consultation 11th July, No. 154.
3. Letters from Consulting Engineer, 21st July, No. 162.

1. I have the honor to forward copies of the papers marginally noted relative to some experiments authorized to be made with preparations by Dr. Stanbrough for the preservation of Sleepers.

2. Major Pears in his observations to Government (para. 9) recommends that these experiments be made with.

Corrosive Sublimate.
Sulphate of Copper.
Chloride of Zinc, and
Arsenite of Potash
2000 Sleepers being treated with each.

3. The Government sanctions the trial accordingly, and Major Pears in transmitting the order to me proposes "to try one or two thousand Sleepers, *i. e.* a few hundred of 5 or 6 different descriptions of wood," the numbers fixed upon being necessary to be reported to him.

4. To proceed then with these experiments as sanctioned by Government, I shall be obliged by your furnishing me with information on the following points.

The exact numbers of Sleepers, you would wish to be tried.

The descriptions of wood.

The arrangements necessary between the Railway Company and Dr. Stanbrough.

5. In para. 10 of his observations to Government, Major Pears observes "It would of course be necessary that the Agent should make enquiries as to the charge for each kind (alluding to the substances to be employed in the experiment) before entering into any agreement." And in his own letter to me he requests I would "ascertain from Dr. Stanbrough the exact nature and extent of his apparatus, and the time at which he expects it will be brought into use."

6. Information on both these points shall be obtained by me from Dr. Stanbrough, when I have received from him the information desired in the 4th para. of this letter. His reply shall be communicated to you.

7. It will of course be necessary to reserve, in time, the number of Sleepers required to be impregnated; but I would observe that we cannot I believe spare any Sleepers at present at this end of the line. As regards an experiment generally I should think the smallest number sufficient to show a fair result preferable to the use of a large number of Sleepers; especially as the whole expense must be borne by the Railway Company.

8. With regard to the remark of the Consulting Engineer that he has observed many Sleepers cracked, I would beg to call your attention to the desirableness of having them placed under cover. Many Sleepers between Madras and Avady are lying exposed, and I mentioned this circumstance to Mr. Wilson when he was lately at Madras. But supposing that the timber had been Kyanised, it would not have prevented the cracks in Sleepers when exposed.

I have, &c.

(Signed) E. SMALLEY,

Agent.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 16*th August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In reply to your letter No. 302, I beg to observe,

1st. It would be well as far as possible, to try one hundred of each important description of timber, and the total for experiment might be stated as one thousand.

2d. The descriptions of wood must depend upon what we can get near Madras, as it would not do to lead the Sleepers to a great distance to be experimented upon. I would suggest therefore that this be left open to be guided by circumstances.

3d. Dr. Stanbrough ought to agree to impregnate the Sleepers at so much a piece for each description of material; and state what test he will submit to ensure the respective processes being efficiently carried out.

As you observe, we cannot at present spare any Sleepers to be experimented upon. It is quite impossible to protect the Sleepers, working as we are with so small a supply; they must be led on to the work and put into their places almost as soon as they are delivered to us so that there is no time for stacking and protecting them.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

MADRAS RAILWAY AGENCY OFFICE,
30th August, 1854.

No. 215.

To HENRY STANBROUGH, ESQUIRE,
Madras.

SIR,

1. It appears by a communication addressed by you to the Consulting Engineer for Railways, that you are desirous of entering into a contract with the Railway Company, for preserving Sleepers according to Kyan's process.
4th May, 1854.

2. I am disposed to permit an experiment to be made with about 1000 Sleepers, consisting of four or five different descriptions of wood, each description of wood being treated with one of the four following substances as suggested by Lieutenant Colonel Pears.

Corrosive Sublimate.
Sulphate of Copper.
Chloride of Zinc.
Arsenite of Potash.

3. I should wish to be informed therefore when your Apparatus (which by your letter seems to be in process of erection) will be ready, and what is the exact nature and extent of it; also what chemical tests you would be disposed to submit to, to ascertain that the process have been perfect and thorough.

4. The charge for each description of solution per Sleeper should also be stated.

5. It should be understood that the officers of the Railway who may be appointed by me, should have free access to the works to witness the process, and to examine and test the solutions whenever required.

6. I am sorry to say that at the present moment every Sleeper is required by the Chief Engineer, but I hope to have a supply of Saul and other woods very soon.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS, 31*st August*, 1854.

To EDWARD SMALLEY, ESQUIRE,
Agent, Madras Railway Company.

SIR,

I have the honor to acknowledge the receipt of your letter dated the 30th Instant in which you state that you are willing to permit me to make an experiment upon 1,000 Sleepers and suggesting the substances with which you think it advisable that these Sleepers should be impregnated.

My proposal was to submit the Sleepers required for the Madras Railway to Kyan's process; making use of a solution of corrosive sublimate, which for reasons stated by me in a former letter, appeared the process best suited for this climate.

I shall be happy to untertake to Kyanise Sleepers with corrosive sublimate upon a clear understanding, that if I am able to convince Colonel Pears, or any scientific Officer, appointed by the Government or Railway Company that the process has been successful, I shall have the contract for Kyanising as many of the Sleepers, required for the Madras Railway, as I am able to undertake.

Should I become the Contractor for this portion of Railway works, I shall be happy to afford the Company facilities for making such expriments as they may wish; but it

can hardly be expected that, without any certainty of receiving a larger contract than 1000 Sleepers (even if these are successfully treated,) I should devote expensive Machinery for the purpose of making experiments upon which I should derive no advantage.

As regards the enquiry requested in para 3 of your letter, I have the honor to state that I expect the remaining portion of the Machinery to arrive, almost immediately, by the "Paragon" and "Steamer." The Machinery is worked by Steam, and of the same nature as that used for the like purpose in Calcutta.

Regarding the test, to which the Sleepers are to be submitted after they have been Kyanised, I would suggest that the Government Professor of Chemistry should be consulted.

Regarding the probable cost of Solutions of Sulphate of Copper and Chloride of Zinc, I am unable to furnish as present any exact estimate. I have reason to believe that it will be found impossible to procure sufficient a quantity Arsenite of Potash in this country at a reasonable expense.

Regarding the facility to be afforded to the Officers of the Railway of visiting my works, I shall have no objection, if the contract is given me, to allow any reasonable number of scientific or practical men to visit the works, while they are employed in the service of the Company.

I have, &c.,
(Signed) H. STANBROUGH,

MADRAS RAILWAY AGENCY OFFICE,
18th September, 1854.

No. 362.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

With reference to your letter of the 16th ultimo, I beg to transmit copy of a letter from Mr. Stanbrough on the subject of preserving Sleepers. He states that he will undertake to Kyanise Sleepers, if the process or trial proves successful, provided a contract is given him for Kyanising as many of the Sleepers required for the Madras Railway as he is able to undertake.

31st August, 1854.

2. It would appear therefore that, without the promise of a contract, Mr. Stanbrough is not willing to make an experiment upon 1000 Sleepers.

3. The proposal made by Mr. Stanbrough in his letter of the 4th May was to enter into a contract to keep the Rail line, viz., from Madras to Salem, (220 miles) when finished, supplied with Kyanised Sleepers for ten years at four Rupees eight Annas per Sleeper. Now even at Madras the Sleepers can be laid down at Rupees 3-2-0 per Sleeper; and at Trivellum for Rupees three and less proceeding Southward. If a preservative process is determined on, whether by creosoting or Kyanising, I suppose there must be an Apparatus at different parts of the line. The whole of the Sleepers can never be brought to Madras without great delay and expense.

4. Of course no person could be expected to make an expensive experiment without remuneration; but I am of opinion that the Railway Company should not be committed in the first instance to an uncertain contract extending over ten years.

5. Any observations made in England upon preserving timber, refer to atmosphere or other influence and not as a remedy against the attacks of white ants.

6. Before replying to the reference made by Government, I shall be obliged by your giving your further opinion upon the subject.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 26th September, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of your letter No. 362, regarding Dr. Stanbrough.

2. If we were asking Dr. Stanbrough to provide himself with an expensive apparatus to make our experiments, his objection would be valid; but he has the Machinery and he cannot reasonably expect a contract before he has proved both its efficiency and the efficiency of the material used. And after the experiments have been tried, and proved successful, he is no loser; provided he is remunerated for work done, even should it be decided to make no contract.

3. Under any circumstances, his first offer is out of the question.

4. There would perhaps however be no objections to guaranteeing Dr. Stanbrough a limited contract for impregnating, say 20,000 Sleepers, at a fair price, provided Government and the Company are satisfied with the results of the experiment.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 226.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter No. 830 of the 18th October, forwarding a correspondence with your Chief Engineer and Mr. Stanbrough regarding the Kyanising of Sleepers and recommending that Dr. Stanbrough be requested to make an experiment upon the payment of fair remuneration, and that if successful a contract for impregnating 20,000 Sleepers be entered into.

I shall be happy to recommend this suggestion to Government; but before doing so, it is desirable that you should ascertain distinctly that Dr. Stanbrough is willing to agree on his part to your proposal; as I observe the only condition he has yet pro-

posed under which he is prepared to make an "experiment" is that he shall have a contract for Kyanising as many of the Sleepers required for the Railway as he is able to undertake. I agree entirely in Mr. Bruce's remarks upon Dr. Stanbrough's letter.

I am, &c.

MADRAS, 19*th October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
25*th August*, 1854.

No. 282.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

1. I have the honor to forward the accompanying original and translation of a Tender for the supply of 30,000 Teak Sleepers of the 1st Class, deliverable at or within ten miles on either side of Vaniembady at 3½ Rupees per Sleeper: and request you will submit the same for the sanction of Government.

To Chief Engineer, 7th August, No. 311. From do. 18th do.

2. A copy of the correspondence, that has taken place on the subject, between myself and the Chief Engineer is herewith forwarded.

3. The Board of Directors have expressed a wish that we should have some Teak Sleepers: and I consider the present Tender a very fair offer, although we could get other timber at a lower rate.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
7*th August*, 1854.

No. 311.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

I have the honor to forward the accompanying translation of a tender offered by Venketahnaranyah and Sashiah Naick for the supply of 30,000 Sleepers of Malabar Teak, at or within, ten Miles on either side of Vaniembady, together with the sample of wood produced therewith, and request you will favor me with your opinion thereon.

2. The price, viz. 3½ Rupees per Sleeper, of Malabar Teak appears reasonable. Of course Teak is superior to other woods; but yet it must be considered whether it is not better to purchase good kinds of wood at a less price.

I have, &c.,

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 18*th August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In returning the accompanying translation of a Tender received with your letter No. 311, of the 7th August, I beg to observe that the price is too high. Rs. 3¼ ought to be sufficient for each Sleeper; but if the supply is to continue short, we had better take them at the price tendered for.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 206.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter No. 282 forwarding a tender from certain parties supplying 30,000 Teak Sleepers, at 3½ Rs. each, to be delivered at or near Vaniembady.

I think it would be well to invite the men tendering in this case to submit revised tender for the same timber delivered at, or near, Coimbatore.

You will observe that, between Amboor and Salem, the better description of Jungle woods in considerable variety will be available at low or moderate prices; that Vaniembady, though favorably situated for such woods, is 200 Miles from the district where these men propose to bring Teak. Malabar Teak is perhaps the best wood that could be found for Sleepers, but since the country which lies between Salem and Coimbatore is ill supplied with timber, and is at the same time nearer to Malabar than Vaniembady, it would be certainly better, if Malabar Teak be available, to save the carriage across the latter place, and bring the wood into use on a portion of the line, where it can be applied to greater advantage.

In fact I do not believe that the men seriously intend to bring Malabar teak to Vaniembady. There is a very inferior description of Teak grown in that neighbourhood, and I would recommend that this tender be not accepted in its present shape; until you have acquired further information about the price of good Jungle woods, deliverable at Vaniembady,

I have, &c.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PALMANAIR,
12*th September*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
12th October, 1854.

No. 328.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to forward the accompanying copy of a letter from the Chief Engineer of the Railway, as to the best and most economical method of purchasing timber, at the Western end of the line, of which Palghaut may be considered the head quarters.

20th September, 1854.

2. Mr. Bruce proposes to appoint an Inspector for the special duty of examining and purchasing timber upon a salary of Rupees 100 per month, and to have it sanctioned for entry in Form A in District No. 14 under Mr. Gale. The whole charge could not be debited against Sleepers, as they will only form a part of the supply of timber proposed to be purchased.

3. As the Chief Engineer appears to have satisfied himself, on the spot, that we can supply ourselves cheaper than by contracting, it may be well at least to make the trial. Contractors ought, under ordinary circumstances, to do the work cheapest, if not best; but the natives are slow to undertake a new business, and our object must be to carry on the work of the Railway in the most economical and expeditious manner.

The actual cost of Sleepers, procured in the way now proposed, must be carefully made out, so that we may judge of the propriety of continuing or altering the plan.

4. We have, up to this time, entered into contracts for the Western end of the line for 52,000 Sleepers deliverable at the following places.

At or with 10 miles on either side of Tirtally,	30,000,	at Rs. 2 10 0	each.
Do. do. at Palghaut,...............	15,000,	at Rs. 2 0 0	each.
At Palghaut,................................	7,000,	at Rs. 2 0 0	

(To be delivered at the rate of 200 or 300 a Month.)

5. You will observe that the Chief Engineer proposes to undertake the entire purchase of timber for every purpose; and only to allot such wood as answers best for Sleepers. By making large purchases on the spot, he will enjoy every advantage as a buyer; but still I think the plan should only be considered experimental, if the Government are pleased to sanction it.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
19th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Coimbatore, 20th September, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I think we could more satisfactorily procure a good supply of Sleepers, between

Coimbatore and the Coast; if we did not enter into contracts with parties in the usual way, but appointed a man specially to search for, or purchase wood, and cut it up for ourselves.

2. We already purchase timber for the Shops at Palghaut, and shall require to extend this still further, when the building of the Railway Carriages is commenced.

3. To prevent any clashing or competition amongst ourselves, I will, if you approve, undertake the entire purchase of timber for every purpose; and such wood as answers best for Sleepers shall be allotted to that purpose reserving for Carriages and other uses what is best suited.

4. I am already authorized to purchase Sleepers, of suitable timbers, when brought to the line. All that I wish now, therefore, is that, as this part of the line is the best district for timber, I may be allowed to appoint a person, for the special duty of examining and purchasing in the Malabar Division.

5. I might debit his salary against the Sleepers; but perhaps it would be more regular to have his salary sanctioned, and entered in Mr. Gales' Form A as "Sleeper Inspector," I would propose the same salary as is given to an ordinary Inspector, Rs. 100. In carrying out this plan, it will be necessary to enter into no more contracts for the delivery of Sleepers in Malabar.

6. I am convinced that we can do it cheaper ourselves.

7. I would of course render to you a monthly account of all expenditure, and all Sleepers received.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

(True Copies.)

(Signed) E. SMALLEY,

Agent.

On a letter (No. 328) from the Agent of the Madras Railway Company, dated the 12th October, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent recommends, on the suggestion of the Chief Engineer, the employment of a European Agent under the title of Inspector to purchase timber in Malabar for Sleepers, and other purposes, instead of trusting to obtain it by contract. The Tenders made and accepted up to the present time for the supply of Sleepers, in that portion of the line, have been few, and at high prices, considering the abundance of good wood in the neighbourhood. For the line between Coimbatore and the Coast, we should require not less than 1,60,000 Sleepers, 52,000 alone have been offered.

2. I think it would be well, that the Agent should be authorized to employ an additional Inspector for this purpose. It is to be observed, however, that it is proposed to employ him in collecting timber for all purposes; and that consequently his whole salary should not be charged to Sleepers.

3. The amount of timber, required for the latter purpose, during these next two years, far exceeds that which will be required by the Chief Engineer for all other purposes taken together; and for this reason, and because the Agent considers that this proceeding should be "experimental," I do not think it either necessary or desirable that the employment of this individual should be sanctioned among the "authorized

Establishment" in Form A, but would recommend that the Agent be instructed to enter his salary in his Monthly Account of expenditure on "Sleepers."

That the same man should be employed, in collecting for the Chief Engineer timber for Station buildings, and a few Carriages, will not materially affect the accuracy of the "Sleeper Account."

MADRAS, 19*th October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 226.

Extract from the Minutes of Consultation, dated 27th October, 1854.

Read the following observations of the Consulting Engineer on a letter from the Railway Agent.

(Here enter 19th October, 1854.)

The Right Honorable the Governor in Council sanctions the employment of a person as Inspector on a salary of Rupees (100) one hundred per mensem for the special duty of examining and purchasing timber in the Malabar Division for Railway purposes; and desires that the Agent be instructed to enter the salary of this servant in his Monthly Account of expenditure on "Sleepers" as suggested by the Consulting Engineer.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
4*th December*, 1854.

No. 395.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

To Chief Engineer, 18th November, No. 461.
From do. do. 27th November, No. 11.

I have the honor to forward the accompanying four samples of woods forwarded by Mr. Sullivan of Vellore, together with a copy of the correspondence that had taken place between myself and the Chief Engineer on the subject, and request you will be good enough to examine the same, and, if you approve of them as fit for Sleepers, to sanction their being admitted into the list of authorized woods for that purpose.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
18th November, 1854.

No. 461.

FROM E. SMALLEY, ESQUIRE,
Agent.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. I have the honor to forward the accompanying four samples of wood, which Mr. Sullivan of Vellore was good enough to send me, together with a statement of their names, Botanical, English and in the Vernacular languages; and request you will be good enough to favor me with your opinion on the quality, &c., thereof as to their fitness for Sleepers, that I may submit the same for the sanction of Government.

2. The samples are also requested to be returned for submission to Government.

3. We are not likely to get a large quantity of these woods, but it is well to make our List as full as possible for the benefit of the Contractors.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Madras, 27th November, 1854.

No. 11.

FROM G. B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to return the four samples of wood supplied by Mr. Sullivan, and would observe that they all appear to be good timber and well adapted for Sleepers.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

Statement showing the names of certain Woods in several languages which are considered fit for Sleepers.

No.	*Botanical Names.*	*English.*	*Tamil.*	*Teloogoo.*
1	Swietenia Febrifuga,. ...	Someda Wood (durable for 100 years in water),.....................	சோம்பை மரம்,..........	సోమిదర్రు.
2	Melia Aadirazchta,.........	Margosa Wood,........	வேப்ப மரம்,...............	వేపర్రు.
3	None,......................	Auray,..................	ஜாவதி,....................	ఆరే.
4	Acacia Lencophlœa or Mimosa Feruginea,	Vel Vela wood or Rusty Mimosa wood,......	வெள்வேல மரம்,..........	తెల్లతుమ్మ.

MADRAS RAILWAY AGENCY OFFICE,
18*th November*, 1854.

(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 288.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 395, of the 4th Instant, and to convey to you the sanction of Government to the admission of the three first description of woods named in your list, viz., Someda wood, Margosa and Auray or Jalary among the woods to be accepted as Sleepers.

Not feeling satisfied regarding the Vel Vaila wood of which I have always heard as indifferent character, I shall be glad if you would cause certified specimen to be procured, if possible, with the bark and leaf, near Madras, where I believe it is to be found.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
9*th December*, 1854.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 159.

Extract from the Minutes of Consultation, under dated 15*th July*, 1854.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 4th July, 1854, No. 165.)

Para. 1. The Right Honorable the Governor in Council will apply to the Government of India for the information required by Major Pears respecting the supply of instruments, &c. from Bengal for the Electric Telegraph for the Railway at this Presidency, and will also address the Home Authorities on the subject, and request them to arrange with the Directors of the Railway Company for sending out the wire and other materials necessary for the construction of the line. In the meantime the Railway Agent here will prepare posts for putting up the wire when it arrives. Stone and Chunnam pillars it is observed have been erected, with success, in a part of the Government line to Bellary; and the Government think desirable that consideration should be given whether this description of Post will not prove more serviceable, and in the end more economical, than wooden Posts.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 161.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Dated 15th July 1854. No. 159.

In forwarding for your information Copy of an order of Government (as per Margin) having reference to the subject of your letter

No. 217, of the 28th June 1854, I have the honor to request that you will favour me with an estimate, for submission to Government, of the probable cost of the works connected with the proposed establishment of an Electric Telegraph along your line of Railway; giving special consideration to the point noticed by Government, viz., the probability of brick and chunam pillars being found more serviceable, and in the end more economical, than wooden posts.

I have, &c.,

CAMP CIRCUMBODY, 19th July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
11th August, 1854.

No 260.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to your letter, No. 161, of the 19th ultimo, on the subject of an Estimate for erecting an Electric Telegraph along our line of Railway, I have the honor to forward transcript of a communication from the Chief Engineer, in which he states that it would probably be more easy for the Government to supply the Estimate from their own experience, than for him to do it, without that experience or any description of the details. The Deputy Superintendent of Telegraphs would, I presume, know the cost, and I have no doubt Lieutenant Chauncey, who is acting, will furnish an Estimate framed from actual expenditure.

2d August, 1854.

2. On the subject of the description of posts to be used, Mr. Bruce, you will observe, prefers timber posts to brick and chunam pillars.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 2d August, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

Sir,

As we are confined by the orders of Government to use the same description of Telegraph as that employed by them, it would probably be more easy for the Government to supply the Estimate of the cost from their own experience, than for me to do it, without that experience, or any description of the details.

2. The fixing of a Telegraph is such an easy matter, that it need not be begun, till the rails are all laid ready for opening the line.

3. In the meantime, I would prepare timber posts at the most convenient points, and when the rails are ready, distribute them along the line, and fix them.

4. Brick and chunam posts of the requisite height would be liable to break; and as in some cases they must be carried along embankments, they are not adapted for a Railway Telegraph.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 186.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer Madras Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 260, of the 11th Instant, forwarding copy of one from the Chief Engineer, and recommending that an Estimate for the construction of the Railway Company's Telegraph should be prepared by Government Officers.

Mr. Bruce, in recommending the adoption of this unusual course, says "we are confined by order of Government to use the same description of Telegraph." This, you will observe, by a reference to a despatch from the Government of India forwarded with an Extract from Minutes of Consultation, No. 103, of the 9th May, 1854, applies solely to instruments, alphabets, and management of correspondence.

The Estimate is required for posts and wires, and setting up; the whole being, as Mr. Bruce expresses it, an easy matter, and one for which I request an Estimate may be forwarded, for submission to Government.

In preparing this Estimate, I request you will be good enough to cause to be exhibited the difference in first cost, between wooden posts of durable material, and pillars of masonry, brick, or stone in chunam, as the character of the country may render most economical and desirable.

I think you will find it well, if not to put up your Telegraph, to collect the materials, some time before the line is ready for the opening; since, if possible, the line Telegraph should be opened, at least as soon as the line itself.

You will observe the opinion of the Government of India, upon this subject, in the despatch above quoted, para. 4.

I have, &c.,

CAMP TIRMANEY,
23d *August*, 1854.

(Signed) T. T. PEARS, LIEUT. COL.
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 210.

Extract from the Minutes of Consultation, dated 22d September, 1854.

Read the following letter.

No. 951.

FROM C. ALLEN, ESQUIRE,

Officiating Secretary to the Government of India.

To SIR H. C. MONTGOMERY, BART.,

Chief Secretary to the Government,

Fort St. George.

Dated 1st September, 1854.

SIR,

Home Department Railway.

I am directed to acknowledge the receipt of your letter, No. 9, dated the 15th July last, and to state that the Superintendent of Electric Telegraphs in India, has reported, in reply to a reference made to him on the subject, that he will be able to furnish the Railway Company at Madras with all the Telegraphic Instruments, &c. therein referred to, within three or four months from the receipt of their requisition.

I have, &c.,

(Signed) C. ALLEN,

Offg. Secretary to the Govt. of India.

FORT WILLIAM,
1st September, 1854.

Ordered to be communicated to the Consulting Engineer for Railways, with reference to Extract Minutes of Consultation, dated 15th July last, No. 159.

(True Extract and Copies.)

H. C. MONTGOMERY,

Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,

Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
25th October, 1854.

No. 338.

FROM E. SMALLEY, ESQUIRE,

Agent.

To LIEUT. COL. T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

29th September, 1854.

From Chief Engineer 2d August.

To Consulting Engineer, 11th August, No. 260.

1. With reference to your communication, dated the 23d August, No. 186, I have the honor to submit for the information of Government copy of a letter from the Chief Engineer, giving the estimated cost for one mile of the Electric Telegraph; that upon wooden posts at Rupees 660, and that upon brick pillars at Rupees 640. The Chief Engineer you will observe, as stated in a former letter, prefers the former description of columns.

19th October, 1854.

2. As explained in a subsequent letter, also herewith sent, Mr. Bruce has purposely omitted "fittings, insulators," &c., in the second estimate.

3. Under the circumstances represented by Mr. Bruce, in the first of his letters, I shall feel obliged by the Government passing their early decision in the matter.

Minˢ. of Cons. 9th May, No. 103.

4. Adverting to para. 6 of the letter from the Government of India to their Consulting Engineer, Major Baker, dated 21st April, No. 426, I beg to be informed when it will be necessary for the Railway Company to apply for a License to erect a Telegraph.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

MADRAS, 16*th November*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 29*th September*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you, as desired, an Estimate of the probable expense of erecting the Electric Telegraph, per mile.

2. In this I have only included the cost of the wires and posts purchased, and put in their places. I have not included the cost of Instruments and office arrangements, which I understand will be undertaken by Government.

3. This Estimate has been drawn up on the supposition that two wires are necessary for the "thorough" and "local" traffic.

4. I am not very sure of some of the prices: but I believe they will be found ample.

5. Besides the Estimate for wooden posts, there is one given for brick columns. In drawing up this, I have named a high price for brick work, in consequence of the small amount to be executed at each spot, which necessarily increases the cost.

6. Under any circumstances I do not think that brick pillars are suitable for the purpose.

7. I shall be glad to know the decision of Government as soon as practicable; as there may be some trouble in getting the number of posts required, and it will be necessary to write to England for the wire and insulators.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
E. SMALLEY,
Agent.

Estimate of cost of one Mile of Electric Telegraph, not including Instruments and arrangements at stations.

Telegraph with Wooden Posts.

	RS.	A.	P.
20 Posts at 6/0 each,	120	0	0
Fittings, Insulators, &c., for each post at 1/8,	30	0	0
Two wires No. 1, wire guage 1 ton at 300/,	300	0	0
Carriage, labour, &c.,	150	0	0
Contingencies,	60	0	0
Company's Rupees,	660	0	0

Telegraph with Brick-in-Chunam Pillars.

	RS.	A.	P.
20 Pillars 1½ yards, each at 6/0,	180	0	0
Double Wire,	300	0	0
Carriage and labour,	100	0	0
Contingencies,	60	0	0
Company's Rupees	640	0	0

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

30*th* *September,* 1854.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, October 19*th,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I purposely omitted "Fittings, Insulators, &c." in the Brick-and-Chunam pillars under the impression that we may probably do without them when bricks are used.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

ELECTRIC TELEGRAPH OFFICE,
Camp Vellore, 8th November, 1854.

No. 1149.

FROM R. L. BRUNTON, ESQUIRE,
Deputy Superintendent Electric Telegraph.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer Railways.

SIR,

I have the honor to acknowledge the receipt of your favor No. 147; my unavoidabl

absence from office for a few days has prevented my replying to the same in due course.

I have pleasure in giving you all the information I am able to afford on the subject named in your letter; but I regret being at present unable to give you many details as the result of experience.

With regard to comparative cost of wood and stone pillars, I find good Teakwood posts cannot be procured under Rs. 10. I have Iron wood posts from Henzai, T. and M. Provinces offered at 5¼ Rupees each, delivered at Madras, the ports of Henzai only being open during the North East monsoon, posts can only be shipped from that place between the months of November and April.

The solid slabs of granite erected by Colonel Green on some portion of the line in Mysore, cost, including erection, about 16 Rupees each; and as they cannot be moved far from the places at which the stone is found without greatly increased expenditure, the use of them is limited to certain districts.

The cost of stone in Chunam pillars varies in different districts, from 10 to 16 Rupees.

I greatly prefer pillars of stone and chunam, or brick and chunam, with stone caps, or wooden caps, and glass, or glazed earthenware insulators: these have the advantage over wood in point of durability; and over the solid stones in portability, and facility for adaptation to the wires.

I regret I cannot give you the result of any accurate experiments regarding the insulation of any portion of our line placed on wood, compared with a similar length placed on stone. I have as yet no long section of line supported exclusively by stone slabs or stone and chunam pillars. I do not think this however at all important; and would advise your leaving the question of insulation to be decided after you have determined the number of wires you will use or provide for, and the kind of supports you deem best to adopt from other considerations.

I have the honor, &c.,

(Signed) R. L. BRUNTON,

Depy. Supt. Elec. Telegraph.

(True Copy.)

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,

Fort St. George.

RAILWAY DEPARTMENT,

Consulting Engineer's Office.

No. 237.

FROM LIEUT. COL. T. T. PEARS, C. B.,

Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to the enquiry contained in the 4th Para. of your letter No. 338 of the 25th of October, I have the honor to state that it is necessary you should make a special application to Government for license to construct and work an Electric Telegraph upon the line or lines under construction by the Madras Railway Company.

I have, &c.

MADRAS, 27th October, 1854.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

On a letter from the Agent of the Madras Railway Company No. 338, dated 25th October, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent submits a letter from the Chief Engineer, with Estimate of the probable cost of erecting an Electric Telegraph along the line of Railway. Mr. Bruce calculates the cost for wooden posts at Rs. 660 per mile: for brick and chunam pillars Rs. 640; and gives the preference to the former. He does not however give his reasons. Mr. Brunton, as will appear from the accompanying letter, prefers pillars of masonry; and as that Gentleman has had some experience in this country his opinion carries weight with it.

2. I am inclined to think pillars of brick will be the best, and the rather; because it will not be necessary, on a Railway, to carry the wires so high as is done on the Government lines, except at the level crossings.

3. The system adopted however must depend much on the locality; and I would suggest that the Estimate be sanctioned: in which case I shall communicate with the agent upon the subject, and cause posts or pillars of masonry to be used as circumstances seem to render expedient.

4. I have informed the agent, with reference to the orders of the Supreme Government as per margin that it will be necessary to apply for a license to set up the Telegraph. Such application may be considered as a mere form in this case, as, among the General Rules lately published for Railways in India, the first requires that every line of Railway, intended to be worked by Engine power, for the conveyance of passengers shall be provided with an Electric Telegraph.

21st April, 1854.

MADRAS,
16*th November,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 248.

Extract from the Minutes of Consultation, dated 28*th November,* 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 16th November, 1854. No. 338.)

The Right Honorable the Governor in Council sanctions the estimated cost of erecting an Electric Telegraph along the line of Railway at Rupees (660) six hundred and sixty per mile for wooden posts, and at Rupees (640) six hundred and forty for masonry pillars; and desires that the Consulting Engineer will communicate, as proposed with the Agent of the Railway Company, on the subject of using wood and masonry as may suit different positions.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS. C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In forwarding for your information the accompanying copy of an order of Government sanctioning the estimate submitted with your letter No. 338, of the 25th October, I have the honor to remind you that it is necessary the Railway Company should obtain license for constructing and working an Electric Telegraph.

No. 248, 28th November, 1854.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
30th November, 1854.

MADRAS RAILWAY AGENCY OFFICE,
2d December, 1854.

No. 392.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to Paras. 6 7 and 8 of a communication from the Government of India to their Consulting Engineer in the Railway Department, dated the 21st April 1854, No. 426, I have the honor to request that the Government of Madras will be pleased to furnish the Madras Railway Company with a license for erecting and working an Electric Telegraph along the line of Railway, now under construction.

Vide Mins. of Cons. of Govt. of Madras, dated 9th May 1854, No 108.

2. No Legislative enactment as proposed has, I believe, been passed as yet; but should there be any, I beg that the Government will be pleased to furnish me with a copy of it.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted for the orders of Government.

MADRAS,
4th December, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 14.

TO THE SECRETARY TO THE GOVERNMENT OF INDIA.

SIR,

With reference to Mr. Officiating Secretary Allen's letter of the 21st April last, No. 445, I am directed by the Right Honorable the Governor in Council to submit for

the orders of the Government of India, copy of one from the Agent of the Madras Railway Company applying for a License for erecting and working an Electric Telegraph along the line of Railway now under construction in this Presidency.

I have, &c.,
(Signed) H. C. MONTGOMERY,
Chief Secretary.

FORT ST. GEORGE,
12*th December*, 1854.

(True Copy.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.
Consulting Engineer for Railways.
For information.

MADRAS RAILWAY AGENCY OFFICE,
7*th January*, 1854.

No. 8.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

24th December, 1853.

1. I have the honor to forward copy of a letter, from the Chief Resident Engineer, on the subject of the Electric Telegraph.

2. Mr. Bruce recommends one Telegraphic communication, for the joint advantage of the Government and the Railway. So far as the expense enters into the question, there can be no doubt that such a plan would be desirable. I rather think, however, that the Government have considered the necessity of communicating with places such as the Mount, Poonamallee and Arcot, which our Railway will not reach.

3. There is much judicious observations in Mr. Bruce's letter, and you will perhaps be good enough to submit the matter for the consideration of the Government.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the order of Government.

MADRAS,
6*th February*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Coimbatore, 24th December, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. Allow me to draw your attention to the subject of the Electric Telegraph regarding which it seems desirable that early steps should be taken.

I believe it is expressly understood, that an Electric Telegraph is to be laid along the course of the Railway, for the purpose of facilitating the working of the traffic; which will be the more necessary as the line is to be single.

When in Bangalore a few days ago, I found that arrangements are being made to lay down the Telegraph ordered by Government for their own special purposes; and I understood that the line there being executed is part of the trunk line from Madras to Bombay.

The subject to which I wish especially to draw your attention, and that of Government, is, the advantage which would be derived to all parties, if the Telegraph, now being executed, was made to follow our line of Railway instead of as at present no regularly defined route.

The Government want a Telegraph, and the Railway wants a Telegraph; and one would answer both purposes.

Our line is marked out for fifty miles and will soon be set out much further; it would be a matter of no great difficulty, even where the line is not regularly staked out, to guide the fixing of the Telegraph so as to be in close proximity to the line of Railway.

What I would venture to propose to Government is, that the Telegraph should be fixed by the side of our line to Trivellum; thence, along the North Bank of the Palar until we reach the point South of Vaniembady, where the branch line to Bangalore ascends the Ghauts: from thence in a direct course to Bangalore, and from Bangalore to Bellary, and thence to Bombay.

The advantages, gained by such a course, are, a great saving of expense, there being only one Telegraph instead of two; and great advantages in the working of the Telegraph, from the ease with which it can be defended from intentional violence, and failures discovered, and repairs made, when such are necessary, as must some times inevitably be the case.

The case will be very different, if the Telegraph is laid through untrodden jungles.

I am aware that the impression is that the Railway will be so tardy in its execution, while the Telegraph will be so speedily constructed, that it is useless to think of the one in connection with the other; it will however probably be found that the speed of the one and the delays of the other have been overstated; and that the most judicious course to adopt will be, as far as practicable, to fix the Telegraph on the line of Railway.

Should Government not approve of this suggestion, it will be necessary to make early arrangements for fixing a Telegraph of our own.

I have the honor, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

On a letter (No. 8) from the Agent of the Madras Railway Company, dated the 7th January, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The agent forwards copy of a letter from Mr. Bruce on the subject of an Electric Telegraph, which it is presumed will be required in connection with the Railway.

2. Mr. Bruce states his belief that it is expressly understood that an Electric Telegraph is to be laid along the course of the Railway.

3. It appears in the Deed of Contract between the Honorable E. I. Company and the Railway Company, Para. 4, that the latter undertake to lay a Telegraph "if required." As the Government are now constructing their own Telegraph in the same direction as that taken by the Railway, though not within the limits of the latter; it is evident that a second Telegraph will not be required for Government or public purposes.

4. But I understand that in working single lines of Railway in Europe it is generally considered desirable, if not absolutely necessary, that they should be provided with a Telegraph, laid along the line, to facilitate the rapid conveyance of intelligence and orders from Station to Station. It is more than probable, therefore that such will be required in the present case; and it certainly seems a question worthy of consideration whether the Government Telegraph might not, with propriety, be laid along the line of Railway.

5. One portion of the line of Telegraph, now under construction, extends from Madras to Bangalore; so does the Railway.

6. The course now proposed for the Telegraph runs, as far as I can learn, along the High Road. It would, between Madras and Arcot, never be more than 20 miles from the Railroad: and from thence to Vaniembady would run close to it, though on different sides of the river. From Vaniembady to Bangalore, they will take widely different routes—the Telegraph going by Kistnagherry and Ossoor—the Railroad probably by Coopum and Boodicottah.

7. The main objection to placing the Telegraph on the line of Railway is the apprehended delay; as it is expected the former will be completed long before the latter; and the high road offers in the mean time greater facilities for inspection and repair of the wires, &c. But even though the Railway be not actually completed, its course will be marked out, in ample time for the Telegraph to be laid down before the time of opening contemplated by the Superintendent: and the chief obstructions, upon the line of Railway—the rivers—only now impassable for a few days in each year, are about to be bridged; while it is not in contemplation, I believe, to bridge the "Palaur" at all; so that this difficulty, such as it is, will be equally felt on the High Road now, and much more hereafter.

8. The Railway line to Minel is fixed, and marked out: the continuation to Trivellum is now in hand, and will be staked out in a few days. Thence to Vaniembady is a work of the simplest kind; for the performance of which very little time will be required, when we have disposable men to do it. It may perhaps be, under the circumstances, worthy of consideration, whether the Government Telegraph should not be carried along the line of Railway as far as Trivellum; and if the work there pushes ahead of the Railway, it might take the line proposed generally for the latter work, and the posts might be easily moved, at some future time, within the fences.

9. From Vaniembady to Bangalore, it might follow in like manner the general course proposed for the Railway. There would be many advantages, ultimately, in having the Telegraph along side of, and it may be said under the protection of the Railway; and there would be considerable saving of expense to both. The maintenance and guarding would be greatly facilitated; while though separate wires, instruments and offices would be required by the Railway Company, the same posts would do for all. The Railway Bridges would of course simplify the carrying of the wires across the Rivers.

10. I do not hear that great progress has yet been made in the Telegraph; but if it be considered desirable that it should take in its course the Station of Saint Thomas' Mount and Poonamallee, it might run up to the Railway from the latter place to the

Station near Trivellore; while the Railway Company might have their separate posts and wires from thence back to their Ternimus at Madras.

MADRAS,
6th February, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 50.

Extract from the Minutes of Consultation, dated 25th February, 1854.

Read the following letter.

No. 154.

ELECTRIC TELEGRAPH OFFICE,
Madras, 23d February, 1854.

FROM R. L. BRUNTON, ESQUIRE,
Deputy Superintendent Electric Telegraph.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government.

SIR,

With reference to the Extract from the Minutes of Consultation, No. 42, dated 18th February, I have the honor to inform the Right Honorable the Governor in Council, that whilst I admit the force of the facts stated in the letters of the Consulting Engineer and the Resident Engineer of the Madras Railway, I am under the impression that the plan of placing the lines of Electric Telegraph in India along Railways in course of construction, has been avoided, under the advice of the Chief Superintendent. I have therefore to beg the favor of time being allowed, for my consulting the Chief Superintendent, on the principle in question. As the result will only affect the permanent line and not the flying one now in course of construction, there will be no delay in the Telegraph operations occasioned by the reference.

I have the honor to be, &c.,
(Signed) R. L. BRUNTON,
Deputy Superintendent Electric Telegraph.

Ordered to be communicated to the Consulting Engineer for Railways with reference to his report of the 6th Instant.

(True Extract and Copy.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 79.

Extract from the Minutes of Consultation, dated 10th April, 1854.

Read the following letter.

No. 202.

FROM R. L. BRUNTON, ESQUIRE,
Deputy Supt. Electric Telegraph.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government,
Fort St. George.

SIR,

In my letter to Government, No. 154, dated 23d February, I ask permission to

consult the Chief Superintendent of Telegraphs in India, with reference to a proposal for placing the Line of Telegraph, in this Presidency, along the Railway now in course of construction, I have now the honor to hand the copies of my letter to the Chief Superintendent and his reply.

II. I have the honor to state, that it is my opinion, arrangements may be made, regarding the construction and working of the Telegraph, in this Presidency, to the mutual advantage of the Government and the Railway Company. Advantages have been alluded to by the Consulting, and the Chief Engineers, whose letters on the subject are already before Government, and I know nothing, contrary to the general views expressed in these letters worthy of being stated. However far the interests of Government and the Railway Company may be identical, it will be evident, the question of the Telegraph will have to be dealt with, as though these interests were distinct; and the equivalent, to be given and received, will necessarily require prearrangements. With a view to obtaining as early as practicable, an arrangement based upon the conditions named in the letter of the Chief Superintendent, I have to beg the sanction of Government, to my being placed in direct communication with the Consulting Engineer and Chief Engineer of the Railway Company, or other Gentlemen, with whose assistance I may be able, without loss of time, to submit for the sanction of the Right Honorable the Governor in Council, an equitable plan for the construction and working under one Establishment and supervision, the Electric Telegraph of Government and that of the Madras Railway Company.

Electric Telegraph Office,
Camp Bangalore,
25th March, 1854.

I have, &c.,
(Signed) R. L. BRUNTON,
Deputy Supt. Elec. Telegraph.

Copy.

No. 155.

From R. L. BRUNTON, Esquire,
Deputy Supt. Electric Telegraph.

To Dr. W. B. O'SHANGHNESSY,
Chief Supt. of Telegraphs,
Calcutta.

Sir,

I have the honor to inform you that I am this week in receipt of Extract from Minutes of Consultation, No. 42, copy of which I now enclose together with my report.

II. I have to beg the favor of your informing me, if I am right in the impression that you have a decided objection to the line being placed along the side of the Railroad, and on the same posts as the Railway Telegraph.

III. If you have no objection to the principle in question, I do not apprehend any great difficulty in placing some considerable portion of the Permanent line, between Madras and Bangalore, along the line of Road.

IV. Awaiting the favor of your early reply.

Electric Telegraph Office,
Madras, 23d February, 1854.

I have, &c.,
(Signed) R. L. BRUNTON,
Depy. Supt. Electric Telegraph.

(True Copy.)
(Signed) R. L. BRUNTON,
Depy. Supt. Electric Telegraph.

(Copy.)

No. 178.

To R. L. BRUNTON, Esquire,

Deputy Supt. Electric Telegraph,

Madras.

Sir,

In reply to your letter of the 27th Ultimo, I have the honor to acquaint you that I have no objection whatever to offer to the line of Telegraph being led along the Railway, and made use of for Railway service, provided a double line of wire be made use of and all the arrangements, instruments and establishment be entirely under your control.

I have, &c.,

(Signed) W. B. O'SHANGHNESSY,

Supt. of Telegraph in India.

Electric Telegraph Office,
Agra, the 8th March, 1854.

(True Copy.)

(Signed) R. L. BRUNTON,

Depy. Supt. Electric Telegraph.

Ordered to be communicated to the Consulting Engineer, with reference to his letter of the 6th February last, and that Mr. Brunton, be requested to place himself, as he proposes, in communication with the Consulting Engineer and Railway authorities (if necessary) for the purpose stated.

(True Extract and Copies.)

(Signed) H. C. MONTGOMERY,

Chief Secretary.

To Major T. T. PEARS, c. b.,

Consulting Engineer for Railways.

Financial (Railway) Department.

No. 103.

Extract from the Minutes of Consultation, dated 9th May, 1854.

Read the following letter.

No. 445.

From C. ALLEN, Esquire,

Offg. Secy. to the Govt. of India.

To T. PYCROFT, Esquire,

Secy. to the Govt. of Fort St. George.

Dated the 21st April, 1854.

Sir,

Home Department, Electric Telegraph.

I am directed to forward for the information of the Right Honorable the Governor in Council the accompanying copy of a letter this day written to the Consulting Engineer to the Government of India, respecting the question of Electric Telegraphs for Railways in India.

I have, &c.,

(Signed) C. ALLEN,

Offg. Secy. to the Govt. of India.

Fort William,
The 21st April, 1854.

No. 426.

FROM C. ALLEN, ESQUIRE,

Offg. Secy. to the Govt. of India.

TO MAJOR W. E. BAKER,

Consulting Engineer to the Govt. of India, in the Railway Department.

Dated the 21*st* *April,* 1854.

SIR,

Home Department, Electric Telegraph.

* Mr. Stephenson's letter, No. 1424, dated 27th December 1853, and enclosure with the Consulting Engineer's remarks thereon, dated 2d January, 1854.
To Consulting Engineer, No. 136, dated 9th February, 1854.
From do. do. 10th do.
Ditto to the address of the Governor General, dated 18th do.
Mr. Stephenson's letter, No. 1579, dated 17th March and enclosures, Indent No. 382, and the Deputy Consulting Engineer's remarks thereon, dated the 20th March, 1854.

The Most Noble the Governor in Council has had under consideration the correspondence and papers noted in the margin,* regarding the question of Electric Telegraphs for Railways in India, and His Lordship, having conferred on the subject with you, and with the managing Director of the East India Railway Company, directs me to communicate the following observations, and orders.

2. The Superintendent of Electric Telegraphs contends that the control of every Telegraph in India, including *those on Railways* should belong to his Department. The Railway Company insists, that the entire control of the Telegraph, on its own line, should belong to itself.

3. The proposition does not, in the opinion of the Most Noble the Governor General in Council, admit of dispute; that each Railway must have an Electric Telegraph for the business of its line, wholly its own, and exclusively under its own control.

4. The possession of a Telegraph, by the line, and the certainty that the Government would insist upon their being one, was, I am directed to observe, one of the chief arguments on which the safety of a single track was maintained, and on which that economical mode of construction was sanctioned; but the Telegraph will be of comparatively little use, unless the working of it is under the absolute control of the Railway Company; nor will it be right, or even possible, for the Government to hold the Company responsible for the regularity, and the security of their line, if those who work the Telegraph, on which so much depends, are to be in the service of the Government, and not exclusively under the authority of the Company. For these reasons, His Lordship in Council holds it to be indispensable, that the Railway should have its own Telegraph, worked by its own servants, and exclusively under its own control.

5. The Government has undertaken to construct a general system of Telegraphs, on the main lines of communication, throughout every part of India. The expense of this has been, and will continue to be, very large. It is not just, therefore, that the Railway Company should make use of the Telegraphs, constructed for their lines, in order to convey intelligence for the public; and thus prevent the Government reimbursing itself, for the charges to which it has been put. On the other hand, it would be needless, and unfair, to prohibit the Companies making use of their lines, for conveying public intelligence, to points where they do not come into competition with any Government line.

Further, the Government may retain securely in its own hands the power of commanding the entire system of general communications in India, by merely attaching certain conditions to the grant of a Telegraph for each Railway line.

6. These several ends may, His Lordship in Council observes, be obtained in the following mode.

By the passing of a Legislative Act, giving to the Government that exclusive right

of constructing Electric Telegraphs in India, and prohibiting all other parties from constructing them, except under license from the Government.

A license may, under this Act, be given to a Railway Company, when it applies for leave, to set up an Electric Telegraph. The license should be given, on condition that, for the sake of preserving uniformity, the system adopted by the Government in regard to Instruments, Alphabet, and management of the correspondence, shall also be adopted, and shall be implicitly followed, by the Railway Company; but the signallers, and those who work the Telegraph, should be the servants of the Railway Company, and exclusively under its authority.

In the event of the line of Railway Telegraph coming, throughout its course, in competition with the Government Telegraph, the Railway Company should be prohibited conveying any other intelligence, than such as directly and immediately concerned the working of the Railway. If there were any part of the line, on which the Government Telegraph was not interfered with, then public intelligence might be conveyed, by the Railway Telegraph.

7. In every case, where public intelligence was admitted, the Government should have priority for its messages, on paying for them at the usual rates; and power should be reserved by the Government, as in England, to take temporary possession of every Telegraph, on the occurrence of any public emergency.

8. It might be made a further condition of a grant, that if the Government should, at any time, desire to construct a line of Telegraph, of its own, in the direction of a line of Telegraph previously constructed, along a Railway, the Government should be at liberty to use for its wires the posts already erected, on paying the Railway Company a proportion (say one-half) of the cost of the line of posts. In every such case, the right of conveying public intelligence would be withdrawn from the Railway Company.

9. These Rules would, His Lordship in Council apprehends, answer every public purpose. They may be illustrated, by the line of the East Indian Railway Company.

That Company ought, undoubtedly, in the opinion of the Most Noble the Governor General in Council, to have the right of forming and working a Telegraph, for the use of its line between Calcutta and Agra. But as the Government has formed a line of Telegraph between those two places, it would be unfair that the Railway should compete with it, for the conveyance of public intelligence. The Railway Company, therefore, should be prohibited conveying public intelligence, from Calcutta to Agra, or Benares.

Below Benares, however, the Telegraph of the Railway Company would not compete with the Government Telegraph. The Railway Company might, therefore, be permitted to convey public intelligence so far as Patna—being bound to convey, and to give priority to Government messages, when required, at its ordinary rates of charge.

If, at any time, the Government, on public grounds, wished to have an Electric Telegraph, from Calcutta to Rajmahal, it would be entitled to affix its own wires to the Telegraph posts of the Railway Company, paying the half of the cost of the line of posts; and, thereafter, the Railway Company would no longer be permitted to convey public intelligence, between Calcutta and Rajmahal.

10. The observance of these principles would, in the opinion of His Lordship in Council, ensure uniformity of Telegraph system—command of the general system of Telegraph communication, in all ordinary times, for the Government—entire possession of them in times of emergency—and, lastly, full security for Railway traffic.

11. You are requested to communicate the foregoing principles to the Managing Director of the East Indian Railway Company, with a view to an agreement being entered

into with that Company for giving proper effect to them, when the materials and instruments referred to in the correspondence and in Indent No. 382, can be furnished to the Company from the public Stores.

I have the honor, &c.,

(Signed) C. ALLEN,
Offg. Secretary to the Govt. of India.

COUNCIL CHAMBER,
The 21st April, 1854.

(True Copy.)

(Signed) C. ALLEN,
Offg. Secy. to Govt. of India.

Order. 1. Ordered to be communicated to the Consulting Engineer.

2. Under the views of the Government of India on the subject of Electric Telegraphs on lines of Railway thus announced, it will not be necessary to act on the orders of this Government under date the 10th April, No. 79. An intimation to this effect will be made to Mr. Brunton, with reference to the orders above quoted, which were also addressed to him.

(True Extract and Copies.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

ELECTRIC TELEGRAPH OFFICE,
Camp, Bangalore,
17th April, 1854.

No. 269.

FROM R. L. BRUNTON, ESQUIRE,
Deputy Superintendent Electric Telegraph.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer Madras Railway,
Madras.

SIR,

I have the honor to inform you that by the instructions of the Right Honorable the Governor in Council, contained in Extract from Minutes of Consultation, No. 79, I am requested to place myself in communication with you, with a view to the suggestion of a plan, for the construction and working, under one Establishment and supervision, the Electric Telegraph of Government and that of the Madras Railway Company.

II. I have no doubt you are already aware, that arrangements in some respects similar to these now contemplated, have been adopted, with advantage, between Railway Companies and Telegraph Companies in England, Ireland, and Scotland; but as the terms of agreement in each case, vary as circumstances; I will simply state the most important of the points which have occurred to me and submit for your more mature consideration, the course which has suggested itself, as advantageous equally to the Government of India and the Railway Company.

1st. *Construction of the Line*—Economy, speed and convenience in the procuring of the posts and the erection of them, *along the line of Railway,* would probably be best secured by this portion of the work being undertaken by the Railway Department, as also the provision for Office accommodation wherever required along the line. The line, rod, and its extension and adaptation might readily be undertaken by the Telegraph Department, as also the supply of the necessary instruments, &c.

2d. *Maintenance of the Line.*—Posts or pillars, offices, &c. along the line should

be maintained in proper repair by the Railway Department. The Line rods, instruments, &c. by the Telegraph Department. Transit by Rail for the inspection or repair of the Line of Telegraph, should be allowed by the Railway Company without charge, but subject to well defined regulations.

3d. *Working of the Line.*—The proper Establishment for working the instruments in the transmission or reception of communications to be found by the Telegraph Department. All messages essential to the safe and regular running of the Trains, and all such as can strictly be considered on "Railway service" to be transmitted free of any charge to the Railway Company. All other messages to be a source of Revenue to the Telegraph Department.

III. In the foregoing arrangement, I have considered what each could economically contribute towards the undertaking; but should the plan be regarded as not ensuring an equitable adjustment, I would suggest, it might form the basis of immediate operations. A more rigid agreement need not be adopted, until the values of the proposed equivalents can be more accurately determined.

I have the honor to be, &c.
(Signed) R. L. BRUNTON,
Deputy Supt. Elec. Telegraph.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 128.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

No. 103, dated 9th May, 1854.

Referring to an extract from Minutes of Consultation, as per Margin, copy of which was transmitted to you on the 15th May, I have the honor to request I may be favored, at your earliest convenience, with a statement your views regarding the establishment and working of an Electric Telegraph along the line; the time when you would propose to bring it into operation, and the number of stations, the probable cost of construction in the first instance and that of maintaining and working.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
9th June, 1854.

MADRAS RAILWAY AGENCY OFFICE,
28th June, 1854.

No. 217.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to acknowledge the receipt of your letter of the 9th Instant regarding an Electric Telegraph along the line, and to transmit copy of a letter from the Chief Engineer giving his opinion on all the points noticed by you with the exception of the establishments required.

26th June, 1854.

2. It is impossible to state exactly what establishment will be ultimately required

but so far as I am informed I find that the following will be necessary. A Superintendent must be appointed whose duty will be to travel over the line and examine the instruments, &c., and see the whole kept in order. After a time when a great length of way is opened he will need Assistants. At every first class station and principal junctions, there must be a clerk with a young man to aid him, and two or three porters to carry messages. No extra servants are required in small stations. It is usual, I believe, in England where several small stations follow each other, to fix on one so as to have a station for the Telegraph at about every 10 miles.

3. With reference to the 11th Paragraph of the letter from the Secretary to the Government of India, dated 21st of April, I suppose that the Madras Railway Company will have to enter into an Agreement with the Government, or to obtain a License to construct an Electric Telegraph, and then to indent for materials and instruments from the public stores.

4. Teak posts will be more expensive in the first instance than Bamboos, but I agree with Mr. Bruce that they would be better.

I have, &c.

(Signed) E. SMALLEY,

Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
4th July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
26th June, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

In reply to the letter of Major Pears, No. 128, I beg to observe, *First*, regarding the time when the Telegraph shall be required to be brought into operation; we shall not need it until the Locomotives come out from England, which I suppose will be about March 1855. *Second*, the number of stations; we shall need these at distances varying from seven to ten miles. *Third*, regarding the cost. I am not able to say much on this point, but I suppose we may assume Dr. O'Shaughnessy's estimate as being correct and act accordingly; only that I should like to substitute Teak posts for Bamboos.

The cost of repairs will depend entirely on incidental circumstances, and the strength of the storms with which the Telegraph may have to contend.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

On a letter (No. 217) from the Agent of the Madras Railway Company, dated 28th June, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The order of Government, No. 103, in the Financial (Railway) Department, dated the 9th May 1854, having been communicated to the Agent with a request, that he would furnish information upon certain points connected with the Electric Telegraph; that Gentleman forwards, in the accompanying letter, his own opinion and that of the Chief Engineer of the Railway on some of the arrangements connected with that work. Mr. Bruce thinks the Telegraph will not be required till about March 1855, but if required then, no time should be lost in obtaining materials and making other arrangements for its construction.

2. With reference to the third class of Para. 6 of the letter from the Government of India to its Consulting Engineer, No. 426, dated the 21st April 1854, which accompanied the above order of Government, I would suggest that application be made to Bengal for information as to whether all the instruments, &c., with instructions for their use, can be furnished from thence upon application from the Madras Railway Company; and in the mean time that the agent be instructed to make arrangements for the construction of the line, in anticipation of the appearance of the Legislative Enactment, under which it will be necessary for him hereafter to apply for license to bring the same into operation.

MADRAS, *4th July,* 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 16.

Extract from the Minutes of Consultation, dated 19th January, 1854.

Read the following letter, No. 12, of 1854.

FINANCIAL DEPARTMENT,
(Railway Branch.)

FROM A. MALET, ESQUIRE,
Chief Secretary to the Government of Bombay.

To THE CHIEF SECRETARY TO THE GOVERNMENT,
Fort St. George, dated 10th January, 1854.

SIR,

With reference to the accompanying Extracts of para. 3 of a letter addressed by Mr. Secretary Melvill, to the Superintending Director of the great Indian Peninsula Railway Company, and para. 7 of the Honorable Court's Despatch to the Government of India, No. 10, of 5th October last, I am directed to request that the Government of Fort Saint George will have the goodness to favor the Governor in Council as early as possible with an intimation of their views as to the point, on the boundaries of the Madras Presidency, to which it is probable the line to be constructed in that Presidency will be directed.

2. I am instructed at the same time, to inform you that the results of the surveys which are now being conducted by the great Indian Peninsula Railway Company beyond Poona, and in the direction of the Madras Presidency, will be communicated, to the Government of Fort Saint George, as soon as they are placed before his Lordship in Council, in order that, by mutual arrangement, hereafter, with that Government the views of the Honorable Court to establish a great Trunk line between Bombay and Madras may be fully carried out, without, if possible, any break or interruption at the common boundary line of the two Presidencies.

I have, &c.,

BOMBAY CASTLE, *10th January,* 1854. (Signed) A. MALET, *Chief Secy. to Government.*

Extract, Para. 3, of a letter addressed by Mr. Secretary Melvill to the Superintending Director G. I. P. Railway Company, dated 10th August, 1853.

Para. 3.—With respect to any extension of the line towards the South East, beyond Poona, I am directed to request that the Board of Directors will undertake the surveys of the country within the boundary of the Bombay Presidency. It should be borne in mind, in laying out any such line, that it should be so done, as to form part of a Great Trunk line connecting Bombay and Madras, if that line is ever made.

Extract, Para. 7, of the Honorable Court's Despatch to the Government of India, No. 10, of the 5th October, 1853.

Para. 7.—You will also perceive that we have sanctioned the commencement, by the Great Indian Peninsula Railway Company, of the line towards Poona, so far as it will be common for either route over the Ghauts. The surveys over these mountains, and of the country beyond, towards Bellary, within the limits of the Bombay Presidency, will also be undertaken by this Company.

(True Extract.)

(Signed) A. MALET,

Chief Secretary to Government.

Order.

Ordered to be communicated to the Consulting Engineer for Railways, who will afford the information required in Para. 1.

(True Extracts and Copy.)

(Signed) L. C. MONTGOMERY,

Chief Secretary.

To MAJOR T. T. PEARS C. B.,

Consulting Engineer for Railways.

RAILWAY DEPARTMENT,

Consulting Engineer's Office.

No. 7.

FROM MAJOR T. T. PEARS, C. B.,

Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,

Fort St. George.

SIR,

No. 16, dated 19th January, 1854.

1. I have the honor to acknowledge the receipt of an Extract from Minutes of Consultation, as per margin, forwarding copy of a letter from the Government of Bombay, and instructing me to furnish the information called for therein, viz., the point on the boundaries of the Madras Presidency, to which it is probable the line, to be constructed in this Presidency, (to meet that of the Great Indian Peninsula) will be directed.

Letter from Court of Directors to Supreme Government, No. 8, dated 17th August, 1853, Para. 15.

2. The point aimed at in this Presidency, on the line destined to meet that from Bombay, is Bellary.

3. The distance from Madras to Bellary is, by the Post Office Table, 316 miles; and as we are then within 30 or 40 miles of the frontier of the Presidency, the question put by the Bombay Government may be considered as answered by naming "Bellary." With the exception of those 30 or 40 miles the remaining portion of the Madras and Bombay Trunk line would fall to the Great Indian Peninsula Company.

4. The two lines which appear to present themselves for selection, are, that by Satarah, Belgaum and Dharwar, and that by Sholapoor. I beg to annex a report, upon the subject, from the Collector of Bellary, giving his opinion of the importance of these seve-

rally as far as the district of Bellary is concerned, and also an Extract from a Report from Lieutenant Roberts, who is at present employed under my orders.

* See Report for 1853, p. 14.

5. The Collector has alluded to the bridge across the Tomboodra; but I do not think this a matter of any importance. The character of that River would lead us to expect good foundations on either line; and no great difference in its breadth.

6. The question is one in which the Presidency of Bombay, and its Railway Company, are chiefly concerned; but as every line should be considered, in some measure, with reference also to its position in the entire system, I may observe that the line from Bellary, viâ Sholapoor, appears best suited for a Trunk line—likely to be over an easier country than the other—and the portion between Sholapoor and Bombay serves the inland destricts; and points to ultimate extension of an important line from Bombay to Hydrabad, and the Eastern Coast.

7. The Belgaum and Dharwar line has more of the character of a Coast line; and would probably lie over a more difficult country. This, as well as a line of junction from Bellary towards the Western Coast, may be looked for hereafter; but I should imagine the Sholapoor line the best for our present purpose. As far as I can learn of the exact limits of the late cession from the Nizam to the British Government, it appears that such a line would be wholly upon British territory.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS, 24*th February*, 1854.

BELLARY DISTRICT, COLLECTOR'S OFFICE,
On Circuit at Biloopalah.
16*th February*, 1854.

No. 61.

FROM C. PELLY, ESQUIRE,
Collector of Bellary,

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to acknowledge receipt of your letter of 10th Instant, No. 24, in which you request my opinion as to the manner and degree in which the interests of the Bellary District would be effected by the construction of the Railway line beyond Bellary, by the route of Copal, Dharwar, &c. on the one side; and by the route of Sholapoor on the other.

In the former named route, the line would go further Westward in the Bellary District about 40 miles: and embrace the towns, or rather large and flourishing villages of Hospett and Chetwadgy, &c. taking in the rich cultivation of the village of the Toombuddra river. If it proceeded about 20 miles further Westward, it would also pass through the large village of Humpsagur, on the present route to Dharwar. There would also be this advantage by taking the Hospett route: it would run within 10 miles of the Ramendroog Hills, where a Sanatarium has just been erected by Government.

This route would therefore, as far as Bellary District is concerned, be decidedly preferable to the other route, mentioned on the direct road to Sholapoor. In that case, the route would run through only 30 miles of the Bellary District in a North Westerly direction, embracing no large village or town, unless it made a circuit of a few miles to take in the town of Kumply on the Toombuddra River, which is about 4 miles West of the small village of Arlahully, the direct route to Sholapoor.

In an Engineering point of view, it might probably be a point to consider, on which route the river Toombuddra could be bridged with the greatest facility.

I would take this opportunity of urging the immediate commencement of the Rail-road through this District, as the present unfavourable season will lead multitudes to seek work, who are deprived of their usual occupations; and the employment of them on such a work would be most advantageous to the suffering population.

I have, &c.,
(Signed) C. PELLY,
Collector.

(True Copy.)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 51.

Extract from the Minutes of Consultation, dated 1st March, 1854.

Read the following letter.

No. 52.

MADRAS RAILWAY AGENCY OFFICE,
24th February, 1854.

FROM E. SMALLEY, ESQUIRE,
Agent to the Madras Railway Company,

To SIR H. C. MONTGOMERY, BART.
Chief Secretary to Government, Fort St. George.

SIR,

By desire of the Board of Directors of the Railway, in England, I have the honor to submit direct to Government copy of a Memorandum drawn up by Major Montgomery one of the Directors, regarding the course to be taken by the Railway between Salem and Palghaut.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MEMORANDUM.

1. Our Engineers being about to commence upon the great work of extending the Madras Railway from Menil to the Western Coast, with branches, and having given the deepest consideration to the best mode of carrying out the views of the Government, I would beg to submit the following remarks to the earnest attention of the Board.

2. The direction of the line as far as Salem about 204 miles from Madras having been determined upon, it is from thence to Palghaut, I shall confine my observations.

3. The traffic between Salem and Coimbatore is stated by those best informed on the subject to be very inconsiderable.* To the Westward of the road between these two places the country is composed of a barren range of hills, thinly inhabited, forming the Northern boundary between the Coimbatore District and Mysore. This road, from being the most direct, would seem at first sight the best tract to take the Railway; in which case it would cross the Cauvery about Errode. But were this route adopted, it would throw Trichinopoly, the second most important town in the Presidency, 89 miles from the line. It would be acknowledged, that it is of vast importance in many points of view, that Trichinopoly should be brought within its influence: not only from its being the capital of a most fertile district, with a great population and trade, but for the following reasons. It is adjacent to the Tanjore District, the granary of Southern India. It is the head quarters of the Southern Division of the

* The Collector of Salem the Head Assistant to the Collector of Malabar who has paid great attention to this subject. The Collector of Coimbatore.

army, and the seats of the Courts of Justice. Moreover it must not be forgotten that multitudes flock from all parts of the country to the festivals, periodically held at the Pagodas of Seringham. The Porto Novo iron works would also be brought into easy communication with the Railway.

The desirable object above alluded to can be affected, by carrying the line from Salem by Numculdroog* so as to cross the Cauvery, 41 miles lower down at Vamegul, and before its junction with the Ambraivutty to Caroor on the high road from Southern Districts to Salem, and within 4 miles of Trichinopoly, to which a branch, of easy construction, could be carried (or even 37 miles further on to the densely populated district of Tanjore) parallel with the Cauvery and the high road, proving of immense advantage to the country and the interest of the Railway.

* In the Report of the Collector of Salem it is stated that the whole of the Commerce carried on by means of Carts, Bullocks and Coolies between the Trichinopoly district and Madras, passes through Valliputty where it enters the great high road to Arcot by Salem and Vaniembady. The traffic in a limited direction of Madura and Dindigul districts which now reaches Caroor and thence goes by Salem to Madras would it is fair to infer, be drawn to Valliaputty, when the Rail-road is there available.

5. Caroor from its position would become a great enterport of traffic. From this important point the line would proceed nearly due west for about 94 miles to Palghaut, piercing through cotton cultivation for a great portion of the distance. The line could thus pass within about twelve miles of Coimbatore to which a branch that length could be carried and onwards 21 miles to Nellathory at the foot of the Neilgherry Hills.

6. The length of the line, with branches, from Madras to Ponany would by this arrangement be as follows, and is shown in the accompanying outline map.

Madras to Salem about,	204	Miles.
Salem to Caroor, „	48	„
Caroor to Palghaut, „	94	„
Palghaut to Ponany, „	50	„
Branch from main line to Coimbatore and Nellathory foot of Neilgherries,	33	„
Branch from Vaniembady to Bangalore supposed,	75	„
Branch from Caroor to Trichinopoly,	44	„
Total about...	548	„

7. The distance of 520 miles referred to in Colonel Sims letter to the Honorable Court, the 15th August last, was estimated to cost £7,000 per mile, which gave a large margin. We may, I think, with safety assume £6,500 a mile as sufficient; so that the cost of construction for the whole system of Railways now under consideration would be £35,62,000 in which case the £40,00,000 that has been sanctioned by the East India Company, would still leave a considerable balance for contingencies.

8. The difference of the two routes between Salem and Ponany would give about 16 miles only in favor of the upper line* plus branch to Coimbatore 12 miles. The Engineering difficulties, if any, would I apprehend be equal.

* Salem to Ponany by Erroade and Coimbatore about............ 176
Do. by Caroor and Palghaut,.............. 192
Difference... 16

9. Besides the advantages adverted to in regard to commerce and extended Railway accommodation by the arrangement now suggested, the political objects attainable would be great. The Southern division of the Army would thereby be united to the Presidency division, within which are the Military Stations at Vellore and Arcot, the Mysore division, Bangalore being the head quarters, and the Ceded Districts, Bellary being the principal Station.

10. The most Southern division of the Madras Army would also by this arrangement be united by Railway with the army at Bombay, at Sholapoor, where the Railways of these Presidencies are intended to be joined, and where Troops from both armies are stationed. I may here observe that I marched with my regiment a number of years ago,

from Trichinopoly to Sholapoor by Salem, Bangalore and Bellary, a distance of 610 miles, which occupied two months.

11. The line from Caroor, from its greater range and position, would be far better adapted for the movement of troops to and from the Malabar Coast than a line by Erroade.

12. Should the present favourable opportunity be lost of embracing Trichinopoly within the system of Railways for Southern India, which would, for several reasons, be preferable to a more direct line to the Presidency itself, I am of opinion that a great error would be committed which could not be obviated, but at a great additional expense. Finally the line from Caroor to Palghaut would form an excellent base for future extensions Southwards.

13. Whilst the suggestions I have considered my duty to offer would fully carry out the intention of the Most Noble the Governor General in respect to the general system of Railways laid down for India, they would, at the same time, I feel convinced be most advantageous also in a local point of view and would contribute very greatly to the resources of the Railway.

14. Seeing likewise that the arrangement suggested would in no way interfere with the agreement, as to capital, that has been entered into with the Honorable the Court of Directors, I would beg to propose that the subject be submitted to the favorable consideration and decision of the controlling authorities.

(Signed) D. MONTGOMERIE.

N. B.—The distances are taken from the Atlas of India, on the scale of four miles to the inch, and if we allow 5 per cent. for ascents, descents, and deviations, will I apprehend be found pretty nearly correct.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

Ordered to be forwarded for the notice of the Consulting Engineer when reporting on the line from Vaniembady to the Western Coast.

(True Extract and Copies.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
1*st April*, 1854.

No 104.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to lay before you the accompanying copy of a letter from the Chief Engineer of the Railway, together with the survey of the River Poiney to which it refers. 25th March, 1854.

2. You will observe that Mr. Bruce, refers the site marked on the plan, No. 2. This does not seem to be the narrowest part, but is preferred by the Chief Engineer on account of the nature of the foundation. This is a professional point into which,

D 4

of course, I do not enter, but leave for consideration and decision to you and Mr. Bruce.

Letter of Honorable the Court of Directors to Governor General of India for 18, communicated by Government of Madras 25th October, 1853.

3. The bridge, I presume, must be built for a double line according to the directions from England, dated 17th August, 1853, and should, I think, be constructed wholly at the expense of the Railway Company. I doubt, however, the expediency of forming a track for bandies on any part of the Railway.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS, 10*th April*, 1854.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
Madras, 25*th March*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have now the honor to forward to you the survey of the River Poiney, near Trivellum, showing the various positions which have been examined, with a view of deciding the best site for the Bridge to carry the Railway over that River.

Now that Government have sanctioned the full extension of the Railway to the Malabar Coast, I have left out of the question the proposition, originally made, that the road Department should build the bridge for their own purposes, to be ultimately used by the Railway.

It appeared to Major Pears and myself, when inspecting the ground, in September last, that the narrow part of the River marked No. 4, was the most eligible for the erection of the bridge, for two reasons, the narrowness of the stream, and the apparent excellence of the foundation, rock being visible on the surface.

It will be seen, however, that rock is only to be found for about one-half of the distance, the remainder being sand for at least 20 feet in depth.

Finding this to be the case, and considering it unwise to build on so irregular a foundation, I had borings made in several other places as per enclosed tables.

The site which I purpose to adopt is that marked on the plan as No. 2. We have there nothing but sand, which is preferable to one, partly of rock and partly of sand.

Sections were taken along the originally proposed line all the way to Vellore, but I have not thought it necessary to have this done in the present case, as the character of the country is not materially different.

According to General Orders, I conclude this Bridge must be built for a double line; but as the line in the first instance will be single, it would be easy (if the traffic called for it) to form a track for bandies, to be used certain hours in the day, when trains were not passing.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter (No. 104), from the Agent of the Madras Railway Company, dated 1st April, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. With reference to the orders of Government as per margin, the Agent submits a survey with section, &c. showing the site proposed by Mr. Bruce, for the Bridge across the Poiney.

2. I visited the spot in Company with Mr. Bruce in December last, since which borings have been taken twice at each place upon the several lines marked in the plan 1, 2, 3, 4 and 5. The nature of the soil, as thus ascertained, will be seen in the accompany statement. I should have preferred building the Bridge above the village, had the result of these trails been more satisfactory; but I agree with Mr. Bruce in thinking it very desirable to get a foundation of uniform character; and would recommend site No. 2, where all is sand (with two exceptions, and those at 15 feet depth) down to 20 feet at least. The site is adapted to the general course of the line, as well as any, better than some, of the other.

3. At no great cost in Earthwork, the line will rise at a gradient of 1 in 528 to within 1½ mile of the Bridge, and thence run level right across.

4. The Bridge should be laid upon wells, secured by stone flooring, front and rear retaining walls.

Extract from Minutes of Consultation, 2d July 1853, No. 254.

5. Under the now altered circumstances of the case, the extension of the Railway in that direction having been sanctioned, Government will not probably desire, that the project of building this Bridge by the Road Department should be further proceeded with.

6. I entirely agree with Mr. Bruce in thinking that so long as a single line of rails are found sufficient across this bridge, a road-way for common carts may be laid along side: a light fence should be placed between, and, gates being thrown across the Bridge at each end to be opened only under authority, the ordinary traffic of the country might be carried on at all times, except when the regular trains were expected; when the bridge might be cleared and the gates closed against carts, travellers, &c.

MADRAS,
10th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 91.

Extract from the Minutes of Consultation, dated 1st April, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 10th April 1854.)

Para. 1. The Government approve of the site No. 2, selected by the Chief Railway Engineer, and recommended by Major Pears for a bridge across the River Poiney near Trivellum, as well as the arrangements proposed for providing for the ordinary traffic of the country being carried on, so long as a single line of rails is found sufficient across this bridge.

2. Now that the extension of the Railway in the above direction has been sanctioned, the building of the Bridge will be undertaken by the Railway Company, not by the Road Department as contemplated by the orders of the 2d July last, No. 254, passed in the Department of Public works.

(True Extract.)

(Signed) H. C. MONTGOMERY,

Chief Secretary.

To Major T. T. PEARS, c. b.,

Consulting Engineer for Railways.

Madras Railway, Chief Engineer's Office,

Shervaroy Hills, 27th April, 1854.

From G. B. BRUCE, Esquire,

Chief Engineer.

To E. SMALLEY, Esquire,

Agent.

Sir,

I beg to hand you for submission to Government the Trial Sections and Survey taken by Messrs. Beattie, and Henderson, of about thirteen miles of the most difficult portion of the line between Madras and Malabar, the Ghaut by which it is proposed to descend from the Baramahl to the low country near Salem.

2. The whole of this section has been taken through thick jungle; so that the natural difficulties to be overcome have been by no means small.

3. The remainder of District eight, and nearly the whole of District seven, are, I am informed, clear of jungle; and I hope soon to have possession of the section of both these Districts.

4. On the survey the red line shows the course of the actual section taken, and the blue line shows the deviations from that, which the levels indicate, it is desirable should be made.

5. On the section, the black line shows the surface of the ground along the red centre line as actually taken; the blue surface line is that which will be obtained by following the deviations, shown by the blue centre line in the survey.

6. The steepest gradient is one in one hundred for four miles and a half; and the sharpest curve is half a mile radius.

7. I believe that this is the best line that can be got.

8. If it meets with the approval of Government, I shall be glad to have sanction as early as possible to stake out the line and begin work without delay. There is a great deal of rock, and the construction of the line here will be a work of time: it is desirable therefore to begin this part without waiting for the sections and survey of the adjoining portions, which are much more easy of construction.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 88.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railway.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 130, of the 3d instant with its enclosures; and to return the section on the Moroor Ghaut with the following observations.

Considering the peculiar character of the line, the section given by Mr. Bruce presents many favorable features.

The ascent to the crest of the pass from the Eastward appears to be as good as could be expected. On the descending plane to the Westward, there are, however, some objectionable curves. Objectionable, chiefly, because on too sharp a descent: objectionable to the extent of making it desirable that every effort should be made, and some expense if necessary, sanctioned, in order to get rid of them.

I would beg therefore that some further trial may be made, with a view of ascertaining at how much additional cost these curves of 4, 5, and 6 furlongs may be flattened.

From the section now returned it would appear not improbable that a line (as shown in pencil) lying generally between the two shown by Mr. Bruce might be worth a trial. Of these two, the red line on the survey has good curves and a bad section, the blue bad curves and an improved section. I should be glad to see the curves improved, and would remind you that the circumstance of this being a very expensive portion of the work renders it particularly desirable that no effort should be spared to hit off the best line in all respects.

I have, &c.

MADRAS, 5th May, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 16*th May,* 1854.

FROM G. B. BRUCE, ESQUIRE,
Chief Engineer.

TO E. SMALLEY, ESQUIRE,
Agent.

SIR,

1. Mr. Beattie has marked on the section of the Moroor Ghaut, the alteration in the levels due to the deviations proposed by Major Pears.

2. I am fully alive to the importance of seeking with every care for the best line; and in some cases of going extra expense to secure good curves and gradients.

3. In marking out this part of the line, I was desirous of avoiding heavy work as much as possible, as the whole of the excavations are rock, and the embankments must be made from the cuttings, there being no soft ground from which to procure the soil by side ditches.

4. As originally proposed by me, the summit cutting contains say 80,000 cubic yards of excavation. By deviating it the excavation becomes 160,000.

5. When you consider that this is a rock cutting, in an out of the way and reputedly unhealthy locality; the great increased cost and *delay* in the execution, becomes strikingly apparent.

6. I would at the same time call Major Pears' attention to the fact that some of

the Trunk lines in England have steeper gradients with curves as sharp upon them, over which scores of trains pass daily at a speed exceeding 30 miles an hour.

7. Knowing that to be the case, it does appear to me unnecessary to spend more money, *time*, and in a thinly populated district such as this, than is sufficient to secure a good working Railway.

8. It is very probable that in going over the ground again to stake it out, we may be able to accommodate it in some measure to Major Pears' views, without materially increasing the cost; and I hope that Government will give us permission to stake out the line on that condition without confining us to curves greater than 40 Chains.

I have, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

To the CONSULTING ENGINEER with SECTION,

For information with reference to his letter, dated 5th May, No. 88.

22d May, 1854.

Railway Department,

Consulting Engineer's Office.

No. 117.

From Major T. T. PEARS, c. b.,

Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

I have the honor to acknowledge the receipt of a copy of a letter from Mr. Bruce, dated the 16th Instant, with survey of the line proposed upon the Moroor pass, upon which has been marked the section taken on the line suggested in my letter of the 5th May, 1854, No. 88. I am sorry to find that the improvements in the curves would be attended with so much additional work and expense.

I request that no time may be lost, in setting out the line, and that your Chief Engineer will use every endeavour, as the work advances, and the country becomes better known, to improve the course of the line.

It seems to me especially desirable that the curves near the bottom of the incline should be flattened, if possible, even at some additional outlay.

I return the plan; and request that when the line has been set out, and the section accurately determined, a survey may be forwarded for submission to Government; and I would suggest that such survey be carried a mile or two Westward sufficiently far to show the termination of the pass, with a portion of the section on the plain below.

If you think time might be saved by so doing, I shall be happy to submit the surveys to Government with an approximate estimate for that portion of the line; and a more accurate Estimate in detail for that particular section and district can be forwarded subsequently.

I have, &c.,

Madras,
29th May, 1855.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
29th May, 1854.

No. 171.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

23d May, 1854, paras. 4, 5. I have the honor to annex Extract of a letter received from the Chief Engineer, respecting the direction of the line beyond Trivellum, and request you will be good enough to furnish the information required.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Extract of a letter from the Chief Engineer, dated 23d May, 1854.

Para. 4. Have you received any intimation from Government as to the direction the line is to follow beyond Trivellum.

5. I propose, if I hear nothing to the contrary, to have a trial section made along the line as marked on the Map, forwarded with my report, dated 21st February last, as far as Vaniembady; and after this has been done any other trials can be made.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 122.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter, No. 171, of the 29th Ultimo, I have the honor to inform you, that the line is intended to run from Trivellum to Vaniembady by the most favorable course your Chief Engineer can find. This must depend upon the result of his examination and survey. My own impression, hitherto, has been that the best course would be found along the left bank of the river, crossing the Goriatum river, and not crossing the Palaur till near Amboor; but I have not examined the country very closely.

In a conversation which I had sometime since with Mr. Bruce, I think that Gentleman seemed to think the Palaur might be crossed, with advantage, between Vellore and Policondah.

When this portion of the line shall have been carefully examined, I shall be glad to be favored with a report for submission to Government.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
1st June, 1854.

MADRAS RAILWAY AGENCY OFFICE,
27th May, 1854.

No. 167.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to my letter, No. 151, of the 18th Instant, respecting the direction of the line after crossing the Cortilliaur, I have the honor to submit Extract of a letter from the Chief Engineer. You will observe that that Officer considers the present line as marked out, preferable to one more southerly, as pointed out by the Board.

20th May, 1854, paras. 2, 3 and 4.

2. I am myself of opinion that the present line is sufficiently near to Arcot and Wallajahnuggur, and that the distance of it from those stations is not so great as the Board imagine. Besides the work has so far progressed just now that it would be inexpedient to attempt any alteration or change at present.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Extract of a letter from the Chief Engineer, dated 20th May, 1854.

Para. 2. If the line was brought nearer to Arcot than it is at present marked out, we should have to cross the Palaur River where it is more than a mile broad, or at least to cross the Poiney where it is not much less than one mile.

3. As the line is at present, it is only about three miles from the European portion of Arcot on the North Bank of the River Palaur.

4. Besides the objections presented by formidable river crossings, the line past Menil is to a great extent made.

(True Extract.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 39.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

In an Extract from Minutes of Consultation, No. 164, in the Financial (Railway) Department, dated the 7th instant, I was instructed to submit to Government my views upon an alteration proposed by the Directors of the Railway in the course of the line after crossing the Cortilliaur river; and on the subject of the supply of fuel for the purposes of the Railway.

2. I have now the honor to submit the opinions of the Agent and Chief Engineer of the Railway upon the former of these subjects, viz., the course of the line Westward of the Cortilliaur, and to observe, that as the question appears to be set at rest by the

considerable progress that has been made in the works several miles beyond the River, it is not necessary that I should do more than assure the Government that in my estimation the line which has been taken up is the best that could have been adopted for the work itself; while neither the interests of the country generally, nor of the Railway, are in the least appreciable degree affected by the fact of the line passing three or four miles north of Wallajahnuggur, instead of through it.

3. Wallajahnuggur falls within a space of considerable extent, from which all the traffic destined for the Coast will fall on to the Railway. If the Southern limit of the space is four miles nearer that Town, than it would have been, had the Railway passed into that Town, its Northern limit will be the same distance further off; the whole space drained remains the same under any circumstances, and Wallajahnuggur falls within that space.

4. The extent, to which the interests of the Railway are likely to be affected, is to be found in the additional, and certainly insignificant amount of passengers from the Town that might be supposed to be wholly due to the temptation, or the facilities, offered by the Railway being at their door, instead of three or four miles off.

5. I shall have the honor of submitting some observations on the supply of fuel on a future occasion.

I have the honor, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
20th June, 1854.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 147.

Extract from the Minutes of Consultation, dated 4th July, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 28th June, 1854.)

Ordered that a copy of the foregoing letter and its enclosures be transmitted to the Honorable Court of Directors, with reference to para. 2 of their Despatch, dated 12th April, No. 10, of 1854, with the expression of the concurrence of this Government in the views of the Consulting Engineer and the Railway Officers, that it is inexpedient to alter the line already adopted.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 28th July, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to submit a plan and section which completes the trial survey of Tripatore District, No. 6.

2. The line crosses the course of the drainage of the country, and is necessarily of an undulating character; and the number of Hills scattered about, oblige us to have a great number of curves, but none of these are sharper than one mile radius, and the gradients are favorable.

3. With one or two exceptions, the cuttings are not heavy; and the only bridge of any magnitude, is that over the river at Mulliapoorum near the end of the District.

4. I hope to receive early sanction for the staking out of this portion, as well as that last submitted.

5. The District in the neighbourhood of Cullavy appears to be very favorable for the commencement of the work; and it is probable that if you can make a good beginning there, there will be no difficulty in inducing the work-people to follow Southwards into the less favored Districts near the Hills; I am therefore anxious to be as soon as possible authorized to have the line staked out and begun.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.
(True Copy.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER, WITH THE PLAN AND SECTION.
1st *August*, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 176.

FROM MAJOR T. T. PEARS, C. B.
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of a copy of a letter to your address, from the Chief Engineer of the Railway, dated 28th Ultimo, with plan and section in completion of trial survey of Trippatoor District, No. 7, and I have to convey to you the authority of Government for the commencement of the work of staking out that District, requesting that fair plan and estimate may be submitted as soon as possible.

I beg to call your attention to my letter of the 29th May, 1854, No. 117, in which, authority was conveyed to you for staking out the line on the Moroor Ghaut; but in which it was at the same time requested that the survey of the Ghaut might be carried a mile or two Westward, sufficiently far to show the termination of the pass, with a portion of the section on the plain below.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP ROYALCHERROO,
7th August, 1854.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 28th July, 1854.

FROM G. B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to hand you the remainder of the Plan and Section as taken by Mr. Gale between Coimbatore and Palghaut, along with a report of that Gentleman regarding the line.

2. Since forwarding the last survey, I have had some trials taken to see if the high ground near Coimbatore could be avoided, or a more favorable point found for crossing the ridge. The result is seen in Mr. Gale's report of the 14th instant, from which it appears, that the line originally chosen, presents the most favorable features, there being no lower point or any valley so generally favorable for the line of Railway.

3. In the above remarks I am referring to the portion of line, the survey of which is already in the possession of Government, and a small diagram of which is shown on the plan now forwarded, taken from the Indian Atlas.

4. The first eight miles on the survey, originally sent, are as favorable as the features of the country will admit of, and I shall be glad to have Major Pears' consent to the line being staked out, and work commenced as soon as possible.

5. Beyond these eight miles, we are trying a new line, the results of which inquiry I shall submit when finished. In the mean time I forwarded the survey and section as already taken, from which I do not expect we shall be able to deviate to any great extent.

6. The features of the country are very rough, and the gradients heavy. I hope however by care in lying out the curves, to be able to avoid a good deal of the heavy work shown on the section.

7. I do not of course bind myself to the gradients as now shown; these are rather for the purpose of giving a correct idea of the general inclination, than of showing exactly what our gradients will be.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

COIMBATORE, *14th July*, 1854.

To GEORGE B. BRUCE, ESQUIRE,

SIR,

In accordance with the instruction received from you, I have made a careful examination of the country South of the line originally laid down and surveyed by me. I have extended this examination to a distance of five miles from Koorchy at Coimbatore; and have explored the several valleys running from the high ground to the South East Coimbatore in a Westerly direction.

2. I find that there are three principal valleys marked in the accompanying tracing of the ordnance Map a, b, and c.

3. The first, marked a, is a small irregular valley running from the summit level of the line as originally laid down to Echanary where it joins the other two valleys. It offers no advantage whatever, the height to be attained is the same as that of the original line, and the gradients are much more severe.

4. The valley b, is in many respects superior to the first (a) but the summit level to be attained is 406 feet higher than that of the original line. The valley is moreover one mile and 46 chains further from Coimbatore.

5. The last valley of any importance is perhaps more regular and defined than either of the others, but here again the summit to be attained is higher than in the original line by 30 feet, the addition to the distance from Coimbatore is 2½ miles, making a total distance of nearly four miles in a direct line.

6. I examined the country for a distance of about two miles more in the same direction, but found that no lower level presented itself.

7. The result of my examination is, that there are but three valleys within a reasonable distance of Coimbatore to the South East; that of those the first, having the

same summit, level as the original line, is unsuitable from the quickness of descent; and the other two, in addition to the disadvantage of being more distant from so important a Town at Coimbatore, having higher summit level with no peculiar features to counterbalance these serious disadvantages.

I have, &c.,
(Signed) J. W. GALE,
Resident Engineer, Malabar Division.

(True Copy.)
(Signed) G. B. BRUCE,
Chief Engineer.

To the CONSULTING ENGINEER, with the Plan and Section,
1st *August*, 1845.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

Railway Department,
Consulting Engineer's Office.

No. 178.

From Major T. T. PEARS, c. b.,
Consulting Engineer for Railways.

To the AGENT of the MADRAS RAILWAY COMPANY.

Sir,

I have the honor to acknowledge the receipt of a copy of a letter from the Chief Engineer of the Railway to your address, dated the 1st Instant, forwarding plan and section of a portion of the line between Coimbatore and Paulghaut.

Mr. Bruce speaks in the 3d para. of a small diagram shown in the plan now forwarded. This seems however to have been omitted by an oversight.

Mr. Bruce is of opinion, founded upon his own observation, and the trials that have been made, that the first eight miles on the survey, originally sent, are as favourable as the feature of the country will admit. I have the honor therefore to request that this portion of the line may be staked out, and commenced without delay, a fair survey and estimate of this section being submitted to Government as soon as possible.

The section shown on the survey now under acknwledgment, certainly exhibits features much more unfavorable than I had anticipated, nor was I prepared to find so great an increase in the rate of fall towards Palghaut.

It is however satisfactory to find that Mr. Bruce hopes by care in laying out the curves to avoid a good deal of the heavy work shown on the section.

Mr. Bruce will probably have an opportunity of visiting this difficult portion of the line again, before coming to a final resolution regarding it.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways,

Camp Gooty,
8*th August*, 1854.

Madras Railway Agency Office,
25*th August*, 1854.

No. 284.

From E. SMALLEY, Esquire,
Agent.

To Lieut. Col. T. T. PEARS, c. b.,
Consulting Engineer.

Sir,

21st August, 1854.

I have the honor to annex copy of a letter from the Chief Engineer, relative to the course which the line is to take between Salem and

Coimbatore. The Government, I am aware, approve of the direct route; but I do not know whether a reference is required to be made to the authorities in England, before determining where the Cauvery shall be crossed. The bridge over that river, as Mr. Bruce observes, will be an important work requiring much time for its execution.

I have, &c.,
(Signed) E. SMALLEY,

Submitted (with observations) for the orders of Government.

CAMP PALMANAIR, 11*th September*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 21*st August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

Arrangements ought to be made for commencing the bridge over the Cauvery, immediately after the approaching rains, I shall be glad to learn whether any thing has been decided regarding the course which the line is to take between Salem and Coimbatore.

I have &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 284, dated 25th August, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Chief Engineer of the Railway wishes for instructions, regarding the direction, which the line should take beyond Salem.

2. In the works now carried on between Madras and Salem, and those between Coimbatore and the Western Coast, there is abundance of occupation for the present Engineering staff of the Madras Railway; and it appears to me, question regarding the proper course for that portion of the line having been raised and submitted by the Railway Directors, that no further steps should be taken until the decision of the Honorable Court upon the subject has been made known.

Extract from the Minutes of Consultation, No. 51, dated 1st March, 1854.

CAMP PALMANAIR, 11*th September*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 209.

Extract from the Minutes of Consultation, dated 19th September, 1854.

Read the following letters from the Consulting Engineer for Railways.

(Here enter 11th September, 1854.)

The Government will abide by the opinion of the Consulting Engineer; but will apply to the Honorable Court for their early decision upon the line to be pursued beyond Salem, as it is certainly desirable that preparations for the bridging of the Cauvery, a work of magnitude, should not be delayed.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 50.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

1. I have the honor to acknowledge the receipt of an Extract from Minutes of Consultation in the Financial (Railway) Department, No. 190, dated the 31st August, forwarding copy of a Despatch from the Honorable Court with certain enclosures, and instructing me to give my attention to the views, expressed by the Railway Board, in favor of crossing the Palaur River below the junction of the Poiney therewith.

2. The course which I have, from the first, proposed for the Madras Railway, was that by Trivellum, crossing the Poiney River at that point, following the left bank of the Palaur, ultimately crossing that river at some convenient place in the neighbourhood of Amboor, or between that and Vaniembady, where the river is narrow, and the construction of bridge would be simple and cheap. The line so laid down, (and the bridge at Trivellum is now in course of construction) would pass within three miles of Wallajahnuggur and Ranecpet (which latter place is generally understood now, when we speak of *Arcot*) both of which places stand on the same bank of the river with the present line. It would pass near Vellore, but on the opposite side of the river.

3. The Railway Directors appear to me to over estimate the importance of such a Town as Vellore in permitting it to influence, in any material degree, their determination of the course of the line.

4. The importance of such a town, at the present time, is derived in great measure from the traffic which comes into it from beyond. This supply will be entirely cut off by the Railway at Vaniembady, whatever course it may take, whichever side of the river it may follow.

5. Moreover, as an agricultural market town, Vellore is the centre of a space which includes not only districts upon its own, but those on the opposite, bank of the river.

6. If, therefore, we crossed the Palaur near Arcot, and ran up to Vellore; a bridge must be built there to accommodate the traffic, flowing down from North Arcot, on to the left bank of that river.

7. The arguments advanced by the Railway Directors in favor of crossing below the junction of the two rivers, and carrying the line "as the road runs" along the South (right) bank of the river are, that the line would be brought nearer to Walajah-nuggur and Arcot, and be no longer separated by the river from this station and from Vellore.

8. The Board appear to be under a misapprehension here in speaking of Arcot as separated from the present line by the River; since all of that Town, that gives any importance to it, is found on the left bank, the same whereon the line now runs. As to Vellore, I have shown that, as far as regards the circle, of which Vellore is the centre, and the market, it matters little to that Town, which bank the line is upon. The produce which tends to Vellore from one side, or the other, must cross the river before it reaches the line; and the station will, in fact, go far to supersede Vellore as a central mart and depôt.

9. In determining on which side of a river a line shall pass, in its course up the valley, the question appears to resolve itself into this; from which side does the greatest amount of traffic flow on to the Railway? In this—assuming of course in both cases that proper roads and passes are opened—it is indisputable from the *left* bank.

10. Upon whichever side the line runs there must be bridges—Government works—for the convenience of the people; but as we cannot expect that Government (will certainly not in the case of a river dry for eleven months out of the year) build a bridge, over such a river, to correspond with every station on the line; it is evident that, on the side of the river, where the line of Railway is not, some portion of the traffic will have, during the few days that the river is down, to make a détour to the bridges.

11. The amount of inconvenience, thus felt, will be of course less, if the Railway runs along the side of greatest traffic, than if it be placed on the other side.

12. I must observe that the Directors allude to a project for carrying the line across the Palaur some seven miles above Vellore, as at present informed, I am decidedly opposed to such a plan, and would even much prefer crossing Vellore itself. My present opinion however is that the Railway Company should carry the line as before explained up the left bank, and the Government build a bridge at Vellore.

13. I have before observed that whichever side of the river the line takes there must be bridges—Government works—across that river for the convenience of the people.

14. The number of bridges, necessary for these purposes, may fairly be viewed as dependent on the amount of lateral traffic. Again, it must be borne in mind that such bridges are much cheaper works, than those required in similar situations for double line of Railway.

15. Such are the circumstances to be considered in the present instance, and such the reasons for which I proposed to carry the line along the left (North) bank of the Palaur river.

16. In doing so, the Railway Company would require a bridge over the Poiney at Trivellum (a much lighter work than that proposed across the Palaur below the junction) another over the Goriattum river at Policondah, and finally a small bridge across the Palaur at the upper portion of its course, near, or above, Amboor.

17. The Government will probably build, for the convenience of Vellore, and the traffic entering it from the South, a common road bridge at Vellore across the Palaur—no other at least at present—because there will be, between Vellore and Amboor, little lateral traffic from the *right* bank, although there will be a great deal passing down the Ghauts on to the left.

18. In case the line were taken, as the Directors suggest, on the right bank, a very

large and expensive bridge must be built, by the Railway, across the Palaur, below the junction. The course of the line, in order thus to pass the river, will be tortuous, and it will be met by rocky head lands between that and Vellore. The Railway Company must then build a bridge over a river near Policondah, while their traffic in this neighbourhood, the most important part of which comes through what may be called the Dovab of North Arcot, viz., that from the Cuddapah District and the most important part of North Arcot, and the Eastern Talooks of Mysore, will be greatly checked unless the Government build bridges at Trivellum (across the Poiney,) at Vellore across the Palaur, and, at all events, across the Goriattum river; and even then, without a second bridge over the Palaur, near Policondah, the traffic from above the Ghauts led down by a pass now under survey from Cuddapanuttun, and that neighbourhood, must, in the wet season, pass down the left bank of the Palaur, as far as Vellore, in order to reach a Railway station.

19. Lastly, the line now proposed is the most direct.

20. I have only to add that some progress has already been made in the construction of the bridge across the Poiney at Trivellum, at which point the collective traffic of the Cuddapah and Chittoor Districts meet, and will contribute largely to the business of the Railway.

21. It is my intention, shortly, to examine the Amboor Valley; and I hope to meet the Chief Engineer of the Railway for the purpose of discussing the question of the proper point for crossing the Palaur. At present I entirely disapprove of the proposal to cross it seven miles above Vellore; and if circumstances, with which I am at present unacquainted, should render it impracticable, or inexpedient, to pass up the Amboor Valley on the left bank of the river, I should prefer crossing it at once at Vellore.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

PALMANAIR,
20th September, 1854.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 214.

Extract from the Minutes of Consultation, dated 29th September, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 20th September 1854.)

The Right Honorable the Governor in Council, having considered the reasons, given in the foregoing letter, for crossing the Poiney River at Trivellum, and for carrying the line along the left or north bank of the Palaur, concurs in the opinion expressed by the Consulting Engineer in favour of this course, in preference to that proposed by the Directors of the Railway Company in Paras. 8 to 11 of their letter to their Agent, dated 5th June, No. 25 of 1854, and directs that a copy of Lieutenant Colonel Pears' letter be transmitted to the Honorable Court, with reference to their Despatch, in this Department, dated 12th July, No. 16 of 1854.

(True Extract) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 214.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

With reference to the instructions contained in a letter from the Managing Director

While the construction of the line to Vaniembady is in progress, &c., &c.

* No. 209, dated 19th September, 1854.

to your address, dated the 13th March 1854, para. 7, and to an extract* from Minutes of Consultation as per margin, I do myself the honor of requesting that your Chief Engineer will take an early opportunity of examining and reporting upon the line of country between the Moroor pass and the Cauvery river, with a view to the determination of the best course for the Railway, whether viâ Salem and Sankery Droog to Erroode, or more directly to Bowaney, leaving those places to the South.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP PALMANAIR,
29th September, 1854.

MADRAS RAILWAY CHIEF ENGINEER'S OFFICE,
Madras, 18*th November*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you a tracing of the preliminary survey and section of District 6, as it has been made by Mr. Latham.

The line is by all its main features as favorable as could be selected. The Earthwork is, in some places, rather heavy, but this is unavoidable.

The steepest gradient is in 187½; we shall try to reduce this by finding a lower point to cross the ridge which spurs out from Yellagherry Hills; but, am by no means sanguine of success.

At the South end of this line you will observe two trial sections.

I prefer the upper or Western line; for though it obliges us to cross the two arms of the River the two together are less than the single crossing shown to the East, and we save a descent of about 20 feet.

I shall be glad to receive authority to stake out this line, for which duty Mr. Latham will be ready in about one week.

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER, (WITH THE TRACING.)
For information and Orders.
21*st November*, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 267.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of a copy of Mr. Bruce's letter to your address, dated the 18th November forwarding a tracing of the survey and section on District 6, upon which I have to offer the following observations and suggestions.

This portion of the line was carefully surveyed and levelled by Mr. Tyrrell, and his sections (copies of which have been forwarded to you) give in some respects a more favorable line.

This District may be conveniently considered in two portions.

1st. The plane rising from Vaniembady to the highest point on the water shed near Yerrumputty.

2d. That falling thence to the Muttoor river.

Mr. Tyrrell's survey gives on the first a total length of about 8 M. 13 Ch. with a rise of 187 feet giving an average of 23 feet in the mile: your section gives a distance (from the river near Vaniembady) of 8 M. 40 Ch. and a total rise of 224 feet, giving an average of 26½ feet in the mile.

The gradients according to Mr. Tyrrell's section would be four in number, viz.

Level.
1 in 306
1 in 202
1 in 226

According to your section, they would be three in number and as follows :—

1 in 812
1 in 248
1 in 187

The two lines differ in the course they take, but ultimately pass the same point Cuttaree. If therefore Mr. Tyrrell's levels are correct, his line would appear the best of the two.

On the 2d portion, the line, followed by Mr. Latham, corresponds with that taken by Mr. Tyrrell between Cuttaree and Konachy.

Assuming therefore that this line is the best that could be found, I shall consider only that which remains—from Konachy to the river.

Mr. Tyrrell's line shows a difference of level between these two points, in a distance of about 8 miles, of about 35 feet. The line selected by Mr. Latham, shows in a distance of about 6 miles a difference of 37 feet.

I agree with Mr. Bruce in prefering the upper or Western line; since by crossing the Muttoor river lower down, we lose, if these levels are correct, some 20 feet which have to be made good on the ascent on Districts 7 and 8. All other things being alike, it seems desirable to keep up the valley as much as possible, and Mr. Tyrrell's line, which crosses higher up still, appears therefore, unless there be serious objections to its prolongation on Districts 7, the best line. I request to be favoured with further report on this subject as soon as possible; and with such further trials as may be necessary to determine these questions.

I have, &c.,

MADRAS, 25*th November*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 251.

Extract from the Minutes of Consultation, dated 2d December, 1854.

Read the following papers with the observations of the Consulting Engineer for Railways.

(Here enter 18th November, 1854, No. 264 and 265.)

As it appears that whether or not the Railway be carried by Carroor, the line will

be brought to or close to Coimbatore, and as the Chief Railway Engineer considers it very important to continue the work between the latter station and Palghaut, which is said to be the heaviest on the whole line, the Right Honorable the Governor in Council grants authority for proceeding with the works already commenced between those places as recommended by the Consulting Engineer. The preliminary survey from Palghaut to Beypoor may also be proceeded with.

2. The other arrrangements for carrying on the work to Salem, and the proposed distribution of the Engineers, deferring for the present the survey by the Railway Company of the Cuddapah line, seem to be judicious, and are accordingly approved.

3. With reference to the wish expressed by the Chief Railway Engineer to see Lieut. Roberts' survey, and have the opinion of Lieut. Col. Pears on the Cuddapah line, the Government see no objection to his being furnished with copies of the reports that have lately been prepared and submitted on the subject.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer Madras Railway.

MADRAS RAILWAY,
Coimbatore, 24th December, 1853.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I have the honor to forward to you some drawings of Railway Carriages made by Mr. Simpson the Coach-builder, Madras.

2. These have been done in accordance with the view entertained by you, Major Pears and myself.

3. I confess I should, with full confidence, have left this matter in the hands of our Consulting Engineer and the Board in England, but as it is deemed desirable that it should be discussed in India, and our views laid before the authorities in England, I shall gladly do so.

4. I think it desirable that the carriages should not be very large to avoid the difficulty which would be experienced in moving them at the stations if very heavy; this would lead me to prefer four wheeled carriages to six wheeled ones.

5. It would be an advantage to have the steps of the carriages so extended as to enable the guard to move without danger along the train, and to assist in this a hand-rail might be placed the whole length of the carriage on each side.

6. The ventilation of carriages is a matter of great importance; and this will probably be best secured by spaces left in the sides, both below and above, covered with rattan as shown in the drawing, and by venetians to slide up and down, as in a gentleman's ordinary carriage in this country.

7. On the other hand, to keep out the intense heat and hot winds, the first class carriages should in addition to venetians have glass windows, as at home, and strong leather purdahs to keep off the glare of the sun.

8. And in addition to this, both first and second class carriages should have a double roof.

9. In second class carriages, it appears to be sufficient to have venetians without glass, excepting in the upper pannel of the doors, where it would be better to have both glass and venetians, and the purdahs could in this case be dispensed with excepting over the door.

10. As the third class carriages will be used only by Natives regardless of heat, the above precautions may be dispensed with, and a Carriage having a simple roof supported by Iron Standards, and protected in some measure by strong leather, or cloth curtains, will be sufficient.

11. It is probable that the best lining for the first class carriages will be cloth stuffed in the usual way; though whatever is adopted, great care must be taken to keep away insects.

12. Second class carriages might, with propriety, have rattan seats and backs, and third class wooden seats with a rail for the back.

13. Besides the provisions which it is necessary to make against the heat of the climate; it is also necessary to provide in some measure for the peculiarities of Native society.

14. It is certainly neither the interest, or the duty of the Railway Company, to recognize in any way the distinctions of creed and caste, so as to provide one carriage for a Brahmin, and another for a Pariah, and the only distinction made should be that which can be purchased by money.

15. At the same time there should be every reasonable provision made to enable Natives to be as private as they please.

16. I refer especially to the case of women, and to enable a man to travel with his wife privately without inconvenience to the public or loss to the Railway Company. I should recommend that many of the 1st and 2d class carriages should be made with Coupé at each end.

17. Then in the case of Females travelling alone, it would be easy to assign one particular carriage in a train for women exclusively, when required.

18. In the above remarks, I have assumed that it will be best to adopt three classes of carriages, as I believe that the interests of the Company, and the requirements of the public will be best answered by such an arrangement.

19. I may further add, that I have confined myself entirely to such points as are involved in the peculiarity of this climate, and the customs of its inhabitants, believing that all the ordinary detailed mechanical construction will be better arranged by the Manufacturer in England than I could do it.

20. The plan, originally proposed, of sending out all the iron work (in the first instance at least) from England, and working drawings of the carriages, so that they may be made up in this country, appears to be the best arrangement which could be adopted.

I have, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

NOTE.—I should have stated, of the 1st class carriages, Plans Nos. 1 and 2 appear to be best suited for the purposes required.

(Signed) G. B. B.,

(True Copy.)

(Signed) E. SMALLEY,

Agent.

On a letter (No. 13) from the Agent of the Madras Railway Company, dated the 14th January, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The plans of carriages proposed by the Chief Engineer of the Railway were prepared after consultation with the Agent and myself. I concur in that gentleman's observations and suggestions; but I consider that arrangements will have to be made, hereafter, for providing the cheapest possible means of transport for a fourth class of passenger with the goods train. Carriage trucks, mailvans, and other special conveyances will have to be constructed hereafter. The whole of the upper works might, with advantage, be made in this country, from the commencement; and I doubt not that men of enterprize and ability will be found in Madras to make, after a little observation, the entire carriages.

MADRAS, 21*st February,* 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To THE CHIEF SECRETARY TO GOVERNMENT, *Fort St. George.*

MADRAS RAILWAY AGENCY OFFICE, 18*th January,* 1854.

No. 19.

FROM E. SMALLEY, ESQUIRE, *Agent.*

To MAJOR T. T. PEARS, C. B., *Consulting Engineer.*

SIR,

1. I have the honor to request that you will ascertain whether the Supreme Government have made any concession in favor of the East Indian Railway Company, relative to the payment of Import Duty on Iron Rails. Should such be the case, I have no doubt the Government here would grant us a similar benefit.

2. Machinery of all sorts is, I understand, allowed to be imported duty free with a view to its encouragement.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS, 6*th February,* 1854. (Signed) T. T. PEARS, *Consulting Engineer for Railways.*

To THE CHIEF SECRETARY TO GOVERNMENT, *Fort St. George.*

On a letter from the Agent of the Madras Railway Company, dated 18*th January,* 1854, *No.* 19.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The accompanying letter from the Agent of the Madras Railway Company, respecting the payment of Import Duty on Iron Rails, is submitted for the orders of Government.

2. I cannot myself see any propriety, in making a distinction of this nature in

favour of the Railway Company. Iron Masters in this country are invited to compete with those of England in supplying rails, &c.; and this competition should be offered them upon fair terms. These duties, it seems to me, if not remitted to all should be remitted to none. If the duties upon rails supplied by an English Manufacturer are remitted, and those upon Pig Iron imported by any Iron Manufacturers here are levied, injustice is done to the latter.

MADRAS, 6th February, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To the CHIEF SECRETARY to GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 36.

Extract from the Minutes of Consultation, dated 15th February, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 6th February, 1854, No. 36.)

The Governor in Council is not aware of any peculiar advantages in the import of rails having been conceded to the Railway Company in Bengal. He will, however, ask the Government of Bengal if any concessions have been made in favor of the East India Railway Company, relative to the payment of import duty on Iron rails; and, if any, what are their nature, and the grounds of their being granted.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS C. B.,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 78.

Extract from the Minutes of Consultation, dated 8th April, 1854.

Read the following letter.

No. 84.

FROM THE UNDER SECRETARY TO THE GOVERNMENT OF BENGAL.

To SIR H. C. MONTGOMERY, BART.,
Chief Secretary to Government, of Fort St. George.

Dated Fort William, 16th March, 1854.

SIR,

Railway.

I am directed by the Most Noble the Governor of Bengal to acknowledge the receipt of your letter No. 3, dated the 15th ultimo, and in reply to forward copy of a letter No 804, from the Under Secretary to the Government of India, Home Department, dated the 5th November, and to state that this letter notices the only concession which (as far as this Government is aware) has been made relative to the payment of duty on materials imported for the Railway.

I have, &c.,

(Signed) HOOPER KEITH,
Under Secretary to the Govt. of Bengal.

No. 804.

FROM A. R. YOUNG, ESQUIRE,

Under Secretary to the Government of India.

To I. W. DALRYMPLE, ESQUIRE,

Under Secretary to the Government of Bengal.

Dated the 5th of November, 1852.

SIR,

Home Department Railway.

I am directed to state that the Governor General has been pleased to approve of an arrangement, proposed by the Consulting Engineer to the Government in the Railway Department, for the adjustment of the Government duty on imported materials for the Railway, by a debit to the Railway Company in the accounts of the Custom House instead of a Cash payment by the Railway Agent; and to request that under the orders of the Most Noble the Governor the necessary instructions may be issued to the Board of Revenue to give effect to the arrangement.

I have, &c.,

COUNCIL CHAMBER,
The 5th November, 1852.

(Signed) A. R. YOUNG,
Under Secretary to the Govt. of India.

(True Copy.)

(Signed) HOOPER KEITH,
Under Secy. to the Govt. of Bengal.

Order.

Ordered to be communicated to the Consulting Engineer who will perceive that the only concession that has been made to the Bengal Railway Company is the affording facility for the adjustment of duty charged on the importation of Iron.

(True Extract and Copies.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 58.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

No. 78, dated 8th April, 1854.

I have the honor to forward for your information copy of an Extract from Minutes of Consultation, forwarding letter from the Government of India giving the information called for in your letter No. 19, dated 18th January, 1854. You will observe that the Bengal Railway Company are not exempted from the payment of duty. The payment is made by an entry in the books of the Custom Department against the Railway Company.

I see no advantage in this arrangement; but rather the contrary, as tending to convey a false impression of the actual expenditure, and cost of the work.

I have, &c.,

MADRAS,
11th April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 8.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

It appears very desirable that the Porto Novo Iron Company should be applied to for a further supply of Railway Chairs, in the event of those now contracted for proving to be of good quality. The supply, small as it is, has not yet been received: and it appears to me that the Bengal Railway Officers must have had, ere this, still better means of forming a satisfactory judgment upon them. I would therefore suggest that application be made to the Government of India for a report upon the Cast Iron Chairs, which have been furnished to the East India Railway by the Porto Novo Iron Company.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
27th February, 1854.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 4.

TO THE SECRETARY TO THE GOVERNMENT OF BENGAL.

SIR,

I am directed by the Right Honorable the Governor in Council to forward copy of a communication from the Consulting Engineer for Railways at this Presidency, and to request you will obtain and forward the Report required upon the Cast Iron Chairs, which have been supplied to the East India Railway, by the Porto Novo Iron Company.

Dated 27th February, 1854, No. 8.

I have, &c.,
(Signed) H. C. MONTGOMERY,
Chief Secretary.

FORT SAINT GEORGE,
7th March, 1854.

(True Copy.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.
For information.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 88.

Extract from the Minutes of Consultation, dated 20th April, 1854.

Read the following letter from the Under Secretary to the Government of India.

No. 1596.

FROM THE MANAGING DIRECTOR AND AGENT OF THE EAST INDIA COMPANY.

TO CAPTAIN H. YULE,
Deputy Consulting Engineer to the Government of India.

CALCUTTA, *26th March,* 1854.

SIR,

In reply to your letter No. 1389, dated 21st Instant and its enclosures (now returned

Enclosures No. 8. Major Pears. 27th February, 1854, No. 4. H. C. Montgomerie, Esq. 7th March, 1854.

I have to inform you that no Chairs have been received from the Madras Iron Works since their more improved means of manufacture have been adopted; that 500 tons of Chairs were supplied about two years since; that the complaints urged against them by the Chief Engineer and Inspector who laid them, were

1. Inequality of tilt,
2. Uneveness of seat,
3. Plugholes too large, and,
4. Ill formation of lip,

all evils remediable by increased care in the moulding, and partly excusable from the want of a proper pattern of double chairs as a sample. The quality of the Iron is hard, and strong, and the castings are stated to be now very superior to what they were formerly; a statement susceptible of prompt and conclusive verification at Madras, and the results of which would be desirable to ascertain for the future guidance of the East Indian Railway Company in issuing further orders.

I have, &c.,

(Signed) R. MACDONALD STEPHENSON,
Managing Director and Agent.

MEMORANDUM.

Forwarded to G. Couper, Esq., Under Secretary to the Government of India, Home Department, as containing the information required in the original letters from Madras, transmitted under his No. 283 of the 20th instant. These originals are also herewith returned.

(Signed) H. YULE, CAPTAIN,
Deputy Consulting Engineer to Govt. of India.

31*st March,* 1854.

No. 365.

Copy of the foregoing forwarded to the Government of Fort St. George, with reference to the Chief Secretary Sir H. C. Montgomery's letter, No. 4, dated the Ultimo with a request that the information called for at the conclusion of Mr. Stephenson's letter, may be duly furnished to this Government for communication to the East India Railway Company.

By order of the Governor General in Council.

FORT WILLIAM,
Home Department,
The 1*st April,* 1854.

(Signed) G. COUPER,
Under Secy. to the Govt. of India.

Order.

Ordered to be communicated to the Consulting Engineer for Railways, with reference to his letter dated 27th February, 1854, No. 8, with a request that he will furnish the information required by the Agent of the East Indian Railway Company.

(True Extract and Copies.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
6th March, 1854.

No. 67.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

* 11th February, 1854.

1. I have the honor to forward copy of a letter* from the Chief Engineer of the Railway, specifying the quantity and description of materials required for the construction of the line beyond Menil.

They are as follows:—

Chairs,...	5,000 Tons.
Rails..	250 Miles.
Fishing Plates,..	2,200 Tons.
Bolts,..	400 „

To Cons. Engr. 1st October, 1853, No. 158.

2. In regard to Chairs you are aware that a contract is about to be entered into with the Porto Novo Company for 100 Tons. Mr. Bruce, you will observe, proposes that this contract should be now extended to 1000 tons. The Board of Directors, in their letter to me, have only authorized an experiment to the extent of 100 tons. This quantity has not been delivered yet, so that the quality of the metal has not been tested. Without being satisfied on this point, I am in doubts whether a further contract can be given; and I should be glad to be favored with your opinion. Mr. Bruce is aware of the limitation fixed by the Board: and in recommending an extension of the contract has not given his reasons, though reminded of the orders of the Board which were duly communicated to him.

3. In reference to para. 3 of your letter dated 28th December, No. 143, I shall be obliged by your explaining whether it is necessary that an officer of Government should examine the Chairs authorized to be contracted for. These Chairs are deliverable on the Beach, and are probably by this time ready for shipment. Mr. Beaumont has undertaken to manufacture them without waiting for a specification, and form of tender, which I informed him would be sent to him for his signature, and which I expected from the Chief Engineer. He is however aware that they are subject to rejection by this Company's Engineer, if their material and workmanship are not approved of. Should an extension of the contract for these Chairs be given, as well as a contract for Fishing Plates, &c., will it be convenient for the Government Officer to examine them wherever they may be delivered? Contracts for Sleepers sanctioned by Government have no provision in them, giving the power of rejection on the part of Government. The control of the Government extends over the whole concern as I am well aware.

4. Respecting Fishing Plates and Bolts, which Mr. Bruce recommends to be procured from the Indian Iron Company, I beg to know whether I may enter into a contract for them, provided their cost do not exceed that for which they may be obtained from England. This, however, is not so definite a statement as is desirable. No order has yet been given for 600 Tons as stated by Mr. Bruce. Mr. Beaumont was called upon to state if he could manufacture 100 Tons of Bolts and 600 Tons of Fishing Plates (the quantity originally proposed by the Chief Engineer); and he, in reply, stated [December, 30th] that he would call upon me in Madras in about a month, and make a tender for them. He moreover stated that if I required "a quotation for the same prior to the expiration of that period," he would tender an offer "based upon rates of present prices for such iron at home." This point has not been settled yet: and I shall address you further upon hearing whether I am authorised to enter into a contract for Fishing Plates and Bolts.

5. Mr. Beaumont has not stated to what *extent* Chairs, &c., can be supplied by the Company,—information which was needed by the Government in their Minutes of Consultation of the 26th November. He seems, however, prepared to enter into a contract for Chairs to a further extent; but the information needed will be again called for upon the receipt of your reply.

To Con. Engr. 17th Dec. 1853, No. 230, para. 3.

6. Although I believe you are furnished by the Government with copies of all letters to my address from the Board of Directors, yet I may now state, that, by a letter received, dated 22d August, 1853, No. 11, it appears the Board have made arrangements for materials, only for the experimental line, from Madras to Menil, specified in the margin.

	Tons.
Rails	2150
Chairs	2000
Fishing Plates	330
Bolts and Washers	55
Wood Keys, No.	10000
Of which 500 are for point Chairs.	
Wood Trevails, No.	10000

7. Copy of Mr. Bruce's letter of the 28th February, with copy of the specification and Form of Tender proposed to be sent to Mr. Beaumont for his signature, is herewith enclosed for your information. The specification, you will observe, has been altered so as to suit India.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 11th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I am not sure whether the Board at Home consider it necessary to receive Indents from this country for such things as they know to be absolutely necessary; but, in case they should require this, I beg to submit the following.

2. Contracts have been made in England for 2000 Tons of Chairs, which will be sufficient to complete the line to Menil, with Stations.

3. I propose that 2000 Tons should be sent from England; for the line on the Western Coast; and 2000 Tons more sent to Madras for the extension beyond Menil.

4. The order for 100 Tons, given to the Porto Novo Company, might, with advantage be changed into an order for 1000 Tons; and if the Rivers in that District are navigable, it would be an advantage to make use of them, and have the Chairs deliver-ed to us at the nearest possible point to Salem, which would make the carriage materially less expensive, than if taken from Madras.

5. If this Iron Company have it in their power to supply even a much larger quantity, it is very desirable to give an order, accordingly, rather than send to England.

6. Rails have been ordered sufficient for the first fifty miles. Application should, I think, be made for one hundred and fifty miles of Rails, to be delivered at Madras, within eighteen months; and one hundred miles to be delivered at Ponany, or some Port to be fixed, on the Western Coast.

7. Fishing Plates and Bolts have, I understand, been ordered from the Indian Iron Company, to the extent of 600 Tons, or sufficient for about 70 miles; and Bolts in the same proportion. If this Company can execute a larger order within two years, it would be well to avoid getting the Fishing Plates and Bolts from England.

8. Two hundred and fifty miles of line require about 2,200 tons of Fishing Plates, and about 400 Tons of Bolts.

9. If this order is more than the Indian Company can undertake, an order, for Fishing Plates and Bolts, should be sent to England.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, 28th February, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to hand you the specification of Chairs, altered to suit the circumstances of the Indian Iron Company.

I have there stated 1,000 Tons as being required: this you can alter at your pleasure.

With regard to the control of Government over this contract, it appears to me that their control is in the contract made by the Railway Company, by which they have control over every thing.

If the Government Engineer rejects the Chairs, I must reject them; though Government is never named in the specification.

This is so clearly a principle of our own constitution, as not to need special mention here.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 33.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 67, of the 6th Instant, with enclosure.

With reference to the 3d para. thereof, I have to observe that the Chairs as well as other materials are liable to examination, and subject to the approval of the Government Engineer: that it is not *necessary* that he should examine them whenever they may be delivered or that he should examine them at all.

If, in the preparation of the specification the view taken by Mr. Bruce, which is correct as far as it goes, be adopted, viz., "if the Government Engineer rejects the Chairs I must reject," then care must be taken that the approval of the Chief Engineer be, in no case, officially declared without previous sanction; otherwise, the rejecting power of the Government not being named in the contract, a door would be opened to legal proceedings.

Before noticing the remaining portion of your letter, I request you will inform me of the exact quantity (by weight) of Chairs, Fishing Plates and Bolts, and number of Keys required, per mile of single line, allowing for sidings and stations.

I have, &c.

MADRAS, 8th March, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
13th March, 1854.

No. 75.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to acknowledge the receipt of your letter of the 8th Instant.

2. It is possible that I may not clearly understand the first part of your letter; but as you have not returned the specification, nor stated that the rejecting power of the Government should be inserted in contracts for chairs and other materials, I rather suppose you invite further remark on the subject.

3. I would draw your attention to the circumstance, that the specification in question was drawn up by the Consulting Engineer in England, and has been sanctioned by the East India Company, and the Board of Directors. The alterations now proposed to be made in India, have merely reference to minor details, such as dates and names of places, rendered necessary by our position.

4. Nothing can be more clear, than that chairs as well as other materials are liable to the examination, and subject to the approval of the Government Engineer. I could never mean to question that point. But I think Contractors should not be subject to a double rejection. Even now, they are acting with great caution, and the usual Native timidity; and I am sure that you will agree with me that we should, if possible, avoid increasing this feeling.

5. With respect to your observation that a door might be opened to legal proceedings, I beg to submit, for your consideration, whether it is not sufficient to bind the Contractor to the approval of materials by the Chief Engineer of the Railway. If, at a subsequent period, the Consulting Engineer of the Government should disapprove of any article—and I confidently hope that this will be of rare occurrence—I think the expense of replacing it should fall upon the Railway Company, and would be a fair portion of their responsibility. Of course I merely give this as an opinion, which may be confirmed or rejected.

6. The last paragraph of your letter will be referred to the Chief Engineer for his report.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 38.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 75, of the 13th Instant, and regret to find that mine of the 8th Instant has not been understood.

In that letter I touched upon one point only of those brought forward in your letter, No. 67, of the 6th Instant; and I intimated to you my intention of noticing the remainder on receipt of certain information called for by me.

The point noticed by me, was the exercise on the part of the Government Consulting Engineer of the power of rejecting materials, of whatever kind, furnished by Contractors.

My meaning was, that either that power must be distinctly mentioned in the specification, accepted by the Contractor, or else care should be taken that no materials are passed by your Chief Engineer, without previous reference to this Office; and I explained, that unless one or other of these precautions were observed, a door would be opened to legal proceedings; *i. e.* after the Chief Engineer (whose decision in the specifications had been declared final) had passed them, the Company would not be relieved from the responsibility of payment, upon the rejection of the Government Officer.

Upon further consideration, I am inclined to think that the safer plan would be to mention, in the specification, the final approval of Government. Perhaps the introduction (after the clause relative to dispute) of the words "the acceptance of the supplies being always subject to the approval of Government," or words to that effect, would suffice.

I do not quite understand your suggestion in the 5th para. that the "expense of replacing it should fall upon the Railway Company." That Company can only meet it out of their capital; and it is for the express purpose of controlling the expenditure of that capital, that provision has been made for Government supervision. Perhaps you will be good enough to look at the form of contract used in England, and see how the Government is there alluded to.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
15th March, 1854.

MADRAS RAILWAY AGENCY OFFICE,
18th March, 1854.

No. 81.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to acknowledge the receipt of your letter of the 15th Instant, and to state that I forwarded to you on the 17th December, an exact copy of the specification for chairs received by me from England.

2. You will observe that it is therein stated that the contract is to be executed to the satisfaction of the Company's Engineer, and that no mention is made of the Government sanction. As the authorities in England are very particular in drawing up papers of this description, it appears to me that they have purposely left the approval or rejection of materials to the Executive Officer of the Railway Company.

3. If however the Government here, deem it right to direct, that in all specifications the approval of their Consulting Engineer shall be inserted, I submit that it should appear in the paragraph described as "contract to be executed to the satisfaction of" and run as follows. "The contract to be executed to the satisfaction of the Company's Engineer, and subject to the final approval of the Government Consulting Engineer."

4. I have already stated that I think this double power of rejection will deter Native Contractors from coming forward. In the item of Sleepers I should fear there would necessarily be a delay in paying for them after delivery, where prompt payment is likely to be attended with much advantage.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 43.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 81, of the 18th Instant, regarding the form of specification.

I return the form received with your letter of the 6th Instant, No. 67, having for convenience sake numbered the paras. in red ink.

Before noticing some clauses which call for remark, I have to observe, on your letter under acknowledgment, that in your 2d para., there appears a misapprehension as to the supposed analogy between the position of the Railway Company's Engineer in England and your Chief Engineer here; the former is a Consulting, not an Executive Officer; and he is at once Consulting Engineer to the Government, and to the Company.

With regard "the double rejection," I do not understand the possibility of more than one absolute rejection. The question is, in whose hands to place this in the specification, so as to avoid all change of misunderstanding.

You are quite aware that every Rupee expended in this country is expended in subjection to the approval of Government; and this supervision must, necessarily, be exercised as much in Chairs, Sleepers, instruments, &c. as in bricks and mortar.

With regard to the delay you speak of, I cannot concur with you in thinking, when the Contractor has been, as is always the case, many months in fulfilling his part of the agreement, a delay of five or six days, in paying, can be of the slightest consequence

To pass and receive any articles supplied by a Contractor is to make a purchase, on the part of the Company; and all such purchases should be made, when practicable, with the previous consent of Government.

I think para. 13 of the specification, however proper in England, ill-suited to our circumstances here, because it makes your Chief Engineer's decision or opinion "final." I think this might be struck out with advantage or of this clause, and No. 7 together, a

modification might be made by which your Chief Engineer might be kept in his proper position as your responsible adviser, and Chief Executive Officer, and the ultimate approval remain with the Government.

Whatever form you may adopt, for the purpose of obviating the serious inconvenience, that would arise from the Company being wholly bound by the Chief Engineer's opinion, irrespective of the sanction of Government; the course to be pursued in all cases of supply of materials, upon formal contract, will be for you to address me, stating that such a supply has been received, that the Chief Engineer has reported upon them favorably, and that you recommend them being received and paid for. You will observe that should your Chief Engineer reject any supplies, it would not be necessary for you to make any report upon the subject, unless *expenditure* were involved in such rejection.

I have only further to observe in the specification now returned, that Clause 11 appears out of place as directed to a particular body; whereas from the general character of the paper, and particularly from Clause 16, the document would appear to be of general application to all parties.

I would propose to insert in Clause 11, instead of "the Indian Iron Company" "Parties tendering."

I have, &c.,

MADRAS, 21*st March*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
25*th March*, 1854.

No. 90.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to acknowledge the receipt of your letter of the 21st Instant, and to return herewith the specification for Chairs, with the additions and alterations pointed out by you.

2. The course to be pursued when materials have been delivered shall be attended to.

I have the honor to be, &c.,
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 47.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 90, of the 27th ultimo, returning the form of "specification of chairs" with certain corrections and additions. I would rather leave the preparation of the form entirely to yourself, with the stipulation only, that the power of rejecting contract supplies be reserved to the Government. In the form as now proposed by you, this seems to be provided for. I would, however, request your attention to the form of specification, used on a former occasion, in advertising for Sleepers. Therein you will perceive that para. 7 provides fully all needful security: while the officer thus empowered to reject as regards the Contractor is

fully aware that, in the existing relation between the Railway Company and the Government, his acceptance and purchase must be made subject to the sanction of the latter.

I have, &c.

MADRAS, 3d April, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
27th April, 1854.

No. 125.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to paras. 2 and 3 of my letter, dated the 6th March, No. 67, I have the honor to state that a specification, on account of 100 Tons of Chairs, was forwarded to Mr. Beaumont for his signature on the 10th Instant. It has not been yet returned signed. Mr. Beaumont however, as explained in the above letter, undertook to manufacture the 100 Tons of Chairs, without waiting for a specification. Out of a supply of 4,963 delivered for the present, 4,810 have been admitted, and the rest 153 rejected. A copy of the return received by me from Mr. McNair is herewith enclosed. The weight of the chairs admitted has been omitted; so that I am unable to calculate what sum is payable thereon, and apply for sanction accordingly. This information, however, will be furnished hereafter. Meanwhile I should be obliged if authority were given for receiving the 4,810 chairs into store.

2. In regard to the quality of the metal and the nature of the workmanship, I enclose for your information transcript of a letter* received from Mr. Bruce. You will find that, in both these respects, the Chairs have fallen short. The information contained in this letter may, if you please, be furnished to Government for Communication to the Agent in Bengal, with reference to Minutes of Consultation, No. 88, dated 20th April.

* 18th April, 1854.

I have the honor to be, &c.,

(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 18th April, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

TO E. SMALLEY, ESQUIRE,
Agent.

SIR,

Before leaving Madras, I examined the Chairs which have been supplied from Porto Novo Iron Works.

2. The castings are not so clean, and workman like, as I could have wished, and the metal is evidently tender.

3. The Chairs broke with less force than they ought to have done, though perhaps the test to which they were subjected, was both rude and severe.

4. The case hardening has, I think, the effect of making the metal more brittle, and it would be well to try if they would not be stronger without this.

5. The one hundred tons which have been ordered will give ample opportunity of testing practically the value of these Chairs, and afford suggestions for their improvement if necessary.

6. I have instructed Mr. McNair to have all the Chairs examined by the Inspector of Platelayers; and any which are unfit for use, from defects in workmanship, will be rejected.

7. I shall feel obliged by your allowing my storekeeper to take possession of all which are passed, as we are in immediate want of them for the work.

I have, &c. &c.

(Signed) GEORGE B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

MEMO.

Return of Chairs received from Porto Novo and examined as to their fitness or unfitness for use.

Number Examined.	*Serviceable.*	*Unserviceable.*	*Remarks.*
4,963	4,810	153	The 153 chairs returned as unserviceable are defective in the casting.

(Signed) G. M. BRUCE,

Inspector.

7th April, 1854.

(True Copy.) (Signed) A. H. McNAIR,

(True Copy.) (Signed) E. SMALLEY,

Agent.

RAILWAY DEPARTMENT,

Consulting Engineer's Office.

No. 78.

FROM MAJOR T. T. PEARS, C. B.,

Consulting Engineer for Railway.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter No. 125, of the 27th Instant, I beg to call your attention to the two last paras. of Mr. Bruce's letter to your address of the 18th Instant.

All certificates of this nature should be signed by the Chief Engineer, as evidence of his having approved of the examination, that has been made, and assented to the opinion founded thereon.

In the present case, Mr. Bruce appears to have instructed the Engineer of the District, to have them all examined by an Inspector of Platelayers.

The certificate now forwarded is not signed either by an Engineer, or even by the Inspector of Platelayers, but by the Inspector of Section 1 of the District, who probably knows nothing of the matter.

Concurring in the sentiments expressed in the 5th para. of Mr. Bruce's letter, I shall not hesitate to recommend to Government to sanction the acceptance of 4,810

Chairs, if you are of opinion that your Chief Engineer will be satisfied with the examination of them that has taken place.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
29th April, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 113.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter No. 162, of the 23d instant, forwarding the information applied for in my letter No. 33, of the 8th March last.

It appears from the statement forwarded by your Chief Engineer that the quantity of Iron required for the extent of Railway, already sanctioned, will be—exclusive of that required between Madras and Menil, for which arrangements have been made at home—about 92,000 tons. Irrespective of the present high price of Iron in England, this is an enormous amount of dead weight, for which tonnage will be required within these next four years.

It is manifestly desirable to get all the Iron we can in this country.

I would not, however, recommend, that any further contract* be entered into for Chairs, with the Porto Novo Iron Company, until those which have been already delivered, shall have been fully tested. Under any circumstances, I think it would be well to invite Tenders for Chairs in moderate quantity by public advertisement.

* Referring to your letter, No. 67, of the 6th March.

With regard to the fishing plates, I do not believe there is any Establishment in this part of India, except that of the Indian Iron Company, where they could be made to the extent we require; and as it does not appear that any have yet been despatched from England, it would be well to enter into a contract, with that Company, for some portion of the quantity required, provided the price at which they are tendered be reasonable.

If you are desirous of entering at once into an agreement with the Company, for the supply of fishing plates, I would suggest that the first purchase be small; and that you communicate with the Home authorities, before contracting to a very large extent, thus avoiding the possibility of contracts being entered into, both there and here, for the same articles.

I would suggest to you that the Directors should be reminded, without delay, of the expediency of shipping some portion of the materials of the permanent way, to the other coast, from whence they can be moved by water during a great part of the year to different points of the line, West of Coimbatore.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
27th May, 1854.

MEMORANDUM.

On a letter No. 17, dated the 16th January, 1854 from the Managing Director of the Madras Railway Company forwarding copies of certain Minutes, &c.

In the documents, which accompany this letter, the Chairman of the Madras Railway Board, and their Consulting Engineer, discuss the three following subjects.

1st. The speed at which the trains should travel.

2d. The weight of Rail to be adopted.

3d. The description of Engines, best suited to the Madras Railway.

2. It is not to be expected that I should throw any new light upon a question of this nature, thus ably discussed. I can add nothing to Colonel Sim's thorough knowledge of the country, its condition and requirements: neither can I question the soundness of Mr. Rendel's views upon the relative merits of different Engines, or upon any other question connected with the practical working of a Railway. I think, however, that the real nature of the traffic upon this line has not been yet duly considered; and yet, upon a right understanding of this, each and every one of these several questions appears to depend. We have to consider the traffic in regard to its nature, and its amount. The amount of the goods traffic has been given in my reports, as nearly as it can be, at present, estimated. I estimated it, on the present line of road between Madras and Vellore at an average of 50,000 tons annually, or about 150 tons, daily along the whole line.

3. I found it impossible to ascertain the passengers with any thing like accuracy; but I believe it will be considerable: probably 3 or 400 a day, soon after the first portion of the line opens, with a steady tendency to increase.

4. We have to consider the "nature" of the traffic, with reference not only to the various kinds of commodities, but also with reference to the system upon which it shall be carried on; whether fast or slow, by trains few and heavy, or frequent and light: and this is not as Mr. Rendal would appear to consider it, a question to be determined, with reference solely to the interests of the Railway Company. Railways have every where, pre-eminently *here*—a double duty to perform; to reward their constructors, and to serve the people, and promote *their* interests. The Government would probably require, therefore, upon all the main lines, that, in the traffic arrangements, the convenience of the public shall be, to a certain extent, consulted, by running a definite number of trains daily. We may expect to see 60 or 70 miles of the Railway opened for work, if the Engineers arrive in time, by the beginning of next year. If matters go on as they ought, 50 or 60 miles more, opened in the course of next year, would bring us to Vaniembady; a portion of the line to the Western Coast being far advanced towards completion, at the same time; as well as that between Vaniembady and Salem.

5. The line, between Madras and Vaniembady, is characterized by a continued fall, in one direction, by very light gradients and a moderate amount of Earthwork. The maximum gradient will probably be 20 feet in a mile.

6. The amount of traffic, it will be seen, upon the present high road, does not exceed an average of 150 Tons of goods daily; besides passengers and mails. This will, of course; undergo increase, but however rapid the increase in passenger traffic may be, that in goods will be slow, beyond a certain point. I will assume, as probable, that it is soon doubled; becoming 100,000 tons per annum or 300 daily: beyond this the increase will be retarded, by the necessity of making the roads to feed the Railway, by the peculiar character of much of the country on the flanks of the Railway, bounded (as are Mysore and Cuddapah) by ranges of Hills, with occasional passes only to let the traffic through; and, lastly, by the time required, for the improvement, in the means of transit, to tell upon the amount of agricultural produce.

7. We shall have to begin, then, with a traffic of 300 Tons daily, upon a line of 125 miles in length, and easy gradients, while the greater part of this traffic goes with the fall of the line from West to East, being, to that which meets it, as 10 to 7 nearly.

8. With these preliminary remarks, I shall offer some brief observations upon each of the above points.

1st. The Speed.

9. In my report, dated the 5th of March 1851, I gave my opinion upon the subject in the following words.

10. Para. 80. The question of speed "has also led to some discussion; there can be but one opinion as to the propriety of our adopting the higher rates of speed, which have been introduced (and it is believed at a positive loss), on many of the principal lines in England; but we need not run into the opposite extreme, or propose to construct our lines upon such a refined system of economy, as to render them unsuited to a higher speed than 10 or 12 miles an hour. Kept within the limits of safety, speed is a more question of expense; and up to 20 or 25 miles, not one of much importance; but the Railway, once constructed, should be capable of bearing any speed required, and paid for, within the first mentioned limits."

11. I consider that a clear 20 miles an hour, for passengers, and 12 for goods, will be found, for some time to come, the proper pace for this part of India. I say "will be found," for I doubt whether by any process of abstruct reasoning, the most suitable and economical pace can be determined for this or any other line. This, too, depends upon the nature and amount of traffic, and the extent to which the stock and the locomotive departments can be utilized (if I may coin a word for the occasion). It is quite possible that, as the business presses, a speed of 25 miles for the one, and 15 for the other, might be more profitable to the Company, as well as more convenient to the public.

The Description of Engine.

12. Upon this subject there is an important observation in Mr. Rendel's letter to the Managing Director (of the 19th November last) "the only manner in which such a traffic can be economically conducted, is by running a small number of well filled and therefore paying trains in place of a greater number with lighter loads."

13. Now it appears, that, with our present goods traffic, and that which we are likely to have for the first year, at least one train, each way, of 300 tons (gross) would carry the whole. The traffic will be very great hereafter; the increase will be sure, but gradual. Now, granted, that it would be cheaper to carry the whole in one train, as far as the mere expenses of traction are concerned, is it cheaper when we consider that it involves the necessity of constructing expensive engines for the purpose, and of laying down such expensive rails, to carry those Engines? Moreover, with such a mode of conducting the traffic, contributing as it would, in the least possible degree, to the convenience of the public, and, as a consequence to the development of the country's resources; would it be either advantageous to the Railway Company, or satisfactory to the Government? I think not. In short, the question appears to me to depend, wholly, on the work we have to do; and that work I take to be, to carry loads of moderate size, say 150 tons (gross) at a moderate pace. If we could fill up loads to the capacity of large Engines while we had enough of them to meet the convenience of the public; there could not be, I should think, any objection on the score of fuel consumed. The larger Engine, worked up to its capacity, ought, I should think, to consume less fuel per ton of load than the smaller. Much, almost every thing, seems to depend upon the Engine being worked up to its power and capacity. With these views, of the comparative lightness of the traffic, at the outset—of the extreme desirableness of studying the convenience of the people, to a certain extent, by frequent trains—my opinion is that we should have Engines of less weight, and power, than those which it is proposed to send out; that they should be at first the same Engine both for passenger and goods trains; and that they should be, if possible, constructed so as to burn either coke or wood.

14. In a report of a Committee, of which Captain Huish was Chairman in 1849, I read that the average weight of Engine on the Liverpool and Manchester line in 1848

was 15½ Tons; that the average weight of train was 126 Tons; the speed 19 miles the hour; and, in a letter from a Mechanical Engineer and Manufacturer of great experience which I received not along ago, I was recommended, for passengers, an Engine of about 14 Tons (including tender and water, which would be on the same frame with the Engine) which cost about £1,800. For the "goods" Engines an Engine weighing 12 Tons with coke and water; and a tender weighing about 7 Tons when loaded for starting.

15. There are even much lighter Engines than these it appears, but of their performances we have in this part of the world, no means of obtaining satisfactory information.

THE WEIGHT OF RAILS.

16. The weight of Rails will, of course, depend upon the size of Engine, the speed contemplated, and I presume also somewhat on the character of the line in respect to gradients, &c. The line, now under construction, will be characterized mainly by light gradients with occasional stiff inclines; such as the passes at Vaniembady and near Salem. On all these, and specially on the former, where I imagine it would be necessary to work a special Engine, the Rails should be heavy, 80 or 90 lbs. to the yard. If Engines of moderate size and power, suited to a light traffic, are used, I should certainly think that, for the rest of the line, a Rail of 65 or 70 lbs. would be sufficient.

17. Although the Rail and the Engine have thus a relation, the one to the other; and both are to be considered with reference to the amount of traffic; it is more necessary to consider, and provide for, an inticipated increase in the traffic, in the case of the rail, than in that of the Engine.

18. The Rails, considering the cost of renewal, must be such as will bear the burden of an increased traffic, involving an increased weight of Engine, and velocity of movement: the Engine might, with advantage, I should think, be made to suit present traffic.

19. Present circumstances give unusual importance to the iron question. I think, nevertheless, allowing for the certain increase in the traffic, it might be as well to continue the 84 lbs. rails, already provided as far as Minel, 21 miles further; that is to Trivellum, the point where the North Arcot and Palmanair, and much of the Cuddapah traffic, will fall on to the line; and from whence it may be expected to become, and continue, heavy towards Madras.

20. But though I think it might be well to complete this portion of the stem of the Railway, with these heavy rails, I would carry them no further: and I would have light Engines at first to work even over this portion; pushing them on to the lighter work a head; as soon as it was found necessary to provide greater power for this, which will of course be the heaviest, portion of the line in point of traffic.

MADRAS,
6th May, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 25.

FROM MAJOR T. T. PEARS, C. B.
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

With reference to an Extract from Minutes of Consultation in the Financial Railway Department, No. 74, of the 4th April 1854, I have the honor to submit the accompany-

ing Memo. upon the subject discussed in the several letters and Minutes, which accompanied the letter from the Honorable Court, which were forwarded to me therewith.

I have, &c.,

MADRAS, 6th May, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 109.

Extract from the Minutes of Consultation, dated 16*th May,* 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 6th *May,* 1854.)

1. Ordered that the Memo. submitted with the foregoing letter be forwarded to the Honorable Court of Directors with reference to their Despatch, dated 15th February, No. 5, of 1854.

2. The Government are disposed to concur in the conclusions at which Major Pears has arrived; but observe that the subject appears to be purely professional, and that they do not feel called upon to enter into any lengthened discussion on the merits of the question at issue.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
18*th October,* 1854.

No. 834.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to your letter dated the 27th May, No. 113, I have the honor to inform you that 1000 Tons of Chairs, 300 Tons of Fishing Plates, and 50 Tons of Screw Bolts were advertized for; and I herewith transmit a statement showing the particulars of the Tenders received, all of which, in consequence of the excessiveness of the prices, have been rejected.

5th September, 1854.

2. Under the circumstance of a failure in obtaining materials at favorable prices in this country, Mr. Bruce has suggested that the required quantities should be procured from England, and I accordingly beg to request the sanction of Government for my doing so. The quantities required are, as stated in my letter of the 6th March, No. 67, as follows:—

Chairs,..........................	5000	Tons.
Rails, ...	250	Miles.
Fishing Plates,......	2200	Tons.
Bolts,...........................	400	,,

3. Mr. Bruce has stated that "there will probably still be a considerable quantity required, more than named by him, for Contingencies and extra Work which might be

procured from the Indian Iron Company, provided they can deliver them at the same cost as we can procure them from England.

I have the honor, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS, 23d *October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

Statement shewing the particulars of Tenders for the supply of Chairs, &c., offered as per Advertisement.

No.	Names of Persons who have Offered Tenders.	Chairs.						Fishing Plates.						Screw Bolts Nuts and Washers.						Remarks.
		Amount of Price offered per Ton.			Increase above English Price.			Amount of Price offered per Ton.			Increase above English Price.			Amount of Price offered per Ton.			Increase above English Prices.			
		Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
1	Jas. Beaumont, Esq......	85	0	0	2	8	0	180	0	0	20	0	0	250	0	0	15	0	0	Withdrawn.
1	Mr. C. Grant............	....	...	...	....	..	...	...	12	..	....	..	..	1300	0	0	1065	0	0	
2	Mr. J. Wilder...........	....	..	..	....	...	..	553	0	6	393	12	6	1650	8	6	1415	8	6	
3	Mr. Johannes............	....	..	..	....	...	..	700	..	0	540	4	0	1120	0	0	885	0	0	
4	M. A. Narsinga Row......	....	...	..	...	...	..	....	.	..	..	..	..	822	8	0	587	8	0	
5	M. Narrainsawmy Naidoo	...	..	..	....	...	...	....	..	...	....	..	..	587	8	0	352	8	0	
	English price including Freight and charges...	82	8	0	0	0	0	160	0	0	0	0	0	235	0	0	0	0	0	

MADRAS,
RAILWAY AGENCY OFFICE,
5*th September*, 1854.

(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, (No. 334), dated the 18th October, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent in a letter dated the 6th March last, requested permission to apply to the Home Authorities for certain materials required for the permanent way to the extent of

Chairs	5000	Tons.
Fishing Plates..........	2200	"
Bolts.................	400	"
Rails..	250	Miles.

2. I find from a Statement furnished by the Chief Engineer of the Railway that the Iron (cast and wrought) required for one mile of permanent way, with sidings, will weigh about 200 tons which would give the enormous amount of 90,000 tons weight of Iron, required to complete the lines now sanctioned, and under execution by the Madras Railway Company, besides the materials for the first 48 miles, already provided.

3. I therefore advised the Agent, to test the feasibility of procuring a portion of the Iron here, by advertizing in this country and inviting Tenders.

4. The result is shown in the accompanying letter. One tender only—the Indian Iron Company—was near the English cost (freight included): and that was withdrawn—the reason not being given.

5. The whole of the others are so extravagant, as to furnish no grounds whatever for hopes, that the Indian Iron can compete with the English; or that the Indian Railways can look for any considerable supply from local sources.

6. I would recommend, therefore, that the Agent be instructed to report to the Directors, the results of this experiment, and apply for the Stores alluded to.

MADRAS, 23d *October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 229.

Extract from the Minutes of Consultation, dated 1st November, 1854.

Read the following observation by the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 23d October 1854.)

Under the circumstances represented, the Government approve of the Railway Agent applying to the Home Authorities for the required quantity of Iron materials for the permanent way.

(True Extract) (Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
20th November, 1854.

No. 375.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

The East Indian Iron Company having tendered for sale 100 Tons of Chairs at Rs. 82 the Ton, deliverable on the Beach at Madras, and the Chief Engineer having advised their being purchased, I beg to request the sanction of Government for my doing so.

2. Upon the Chairs being passed by the Company's Engineer a certificate of examination will of course be sent to you, and sanction solicited for the payment of the amount.

3. The price of Chairs landed from England including charges amounts to Rs. 82-8-0, which is a trifle above that asked by the Manager of the East Indian Iron Company.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 265.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter, No. 375, of the 20th Instant, I have the honor to convey to you the authority of Government for the purchase of 100 Tons of Chairs at 82 Rupees per ton from the Porto Novo Iron Company.

I request I may be informed of the proposed time of delivery of these Chairs.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
23*d November*, 1854.

MADRAS RAILWAY AGENCY OFFICE,
16*th January*, 1854.

No. 14.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to transmit copy of a letter from the Chief Resident Engineer, showing the necessity of an increased staff of Engineers, and to request that the sanction of Government may be obtained for my applying to the Board of Directors for five additional Engineers of the 1st Class at £850 per annum and thirteen of the 3d Class at £450 per annum.

2d January, 1854.

2. I hope that the Home Authorities will not have been waiting for this application, but that we shall receive early intelligence of more Engineers having been appointed.

3. The Board of Directors will of course make the necessary reduction in number of Engineers, should it be determined that the construction of the branch line to Bangalore, and the survey of the line to Cuddapah and Bellary, are not to be undertaken at present by the Railway Company.

I have the honor to be, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
15*th February*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
LUCKADICOTTAH, 2*d January*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EWDARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I am not aware upon what system the Directors are proceeding in deciding the

number of Engineers, that should be sent out to this country, to execute the works entrusted to them.

2. We require a largely increased staff, and it is possible that the Board will not send out any more than have already come, unless application be first made to the Madras Government, and their sanction obtained.

3. The whole distance, from Madras to Ponany, I propose to divide, into sixteen districts of about 25 miles each, for each of which an Engineer is required; and as we have at present seven Engineers, nine more are wanted.

4. The branch to Bangalore will need three; making in all twelve, without any to spare for the Cuddapah survey and Contingencies.

5. I beg further to propose that there be, in all, six Engineers, on the salary of £850 each, taking a general oversight of three districts (two beside their own special charge); and as there are at present only three available for this purpose (Mr Wilson, Mr. Gale, and Mr. Beattie), three of the proposed twelve should be experienced men, having salaries of £850 per annum.

6. Then to be able to conduct the Cuddapah survey, there should be two Engineers on £850 and four on £450.

7. I would therefore propose that the sanction of the Madras Government be sought, for the employment of five more Engineers at £850, and thirteen at £450, to be engaged, as the Directors in England may be able to obtain efficient men.

I have, &c ,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter (No. 14,) from the Agent of the Madras Railway Company, dated the 16th January, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

In my report to Government, No. 44, dated the 23d November, 1853, I recommended that 12 more Engineers should be sent out from England, considering that number necessary for carrying on the line now sanctioned, exclusive of the branches to Bangalore and the Neilgherry Hills. Mr. Bruce proposes to make application for 18 Engineers, in addition to those now in the country to be employed as follows:—Nine (in addition to the present seven) upon the line from Madras to the Western Coast; three for the branch to Bangalore, and six for the Cuddapah survey.

To carry on these works simultaneously, no doubt such a number is required; but allowance must be made for the acknowledged difficulty in procuring qualified men, and for the time that will probably elapse before the number thus required can be judiciously supplied.

It must be remembered, that in the meantime portions of the work are in progress, and the men employed on them will be free to take up other portions before long; and will be or ought to be much more efficient men, than such as come to their work at once from England.

It will be sufficient therefore, in my opinion, to show the Home Authorites that employment may be found at once for the number of men mentioned by Mr. Bruce. At the same time I would warn them against making hasty appointments or employing

men of doubtful qualifications: and I would observe that the preliminary examination of the Cuddapah line is in very good hands at present, and the best men to carry out the detail survey, and the staking out of that line, hereafter, will be found among those who are now gaining local experience on the Madras Railway.

Time is, no doubt, of extreme value in such a case as this, because it is "Money;" but in endeavouring to save money by saving time, we must, I think, beware of squandering it in the simultaneous employment of a great number of men on high salaries, all without local experience, and, it may be, some (if hastily appointed) without the necessary qualifications for the work.

MADRAS, 15*th February*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort Saint George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 46.

Extract from the Minutes of Consultation, dated 24th February, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 15th February, 1854.)

1. Ordered, that the foregoing correspondence and the observations of the Consulting Engineer thereon be brought under the special notice of the Honorable Court of Directors by an early opportunity; with the request of this Government that the attention of the Railway Board in England, may be called to the necessity of increasing the Staff of Engineers at this Presidency, to the extent recommended by the Railway Authorities, and to the opinion expressed by the Consulting Engineer, in which the Government concur, that care should be taken in sending out persons possessing the necessary qualifications for the work,

2. Under the recent orders of the Honorable Court, which have been separately communicated to the Consulting Engineer, it would seem that this Government has mistaken their intentions when employing Lieutenant Roberts on the survey of the line by Cuddapah and Bellary; but this subject will be fully noticed in replying to their Despatch of the 30th December, No. 10 of 1853 received by the last Mail.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
23d June, 1854.

No. 209.

FROM EDWARD SMALLEY, ESQUIRE,
Agent,

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

From Board to Court, 13th Mar. 1854, No. 96, *a.*

I have the honor to forward copies of the papers marginally noted respecting the mode of constructing the Railway between Ma-

From Court to Board, 5th April, 1854, *b*.
From Board to Agent, 10th do. do. No. 21, *c*.
From Chief Engineer to Agent, 27th May, do.
From do. to do. 14th June, do.

a Copy sent 1st May, *b. c.* copies sent 8th June. These have since been "passed" and are to be substituted for those intended in this letter.

dras and the Western Coast. With reference to para. 5, of the Board's letter, dated 10th April, and to the observations of Mr. Bruce, in reply dated 14th June, I shall be glad to be favored with any suggestions you might wish to offer respecting the survey and estimates of the Cuddapah line.

I have, &c.,

(Signed) E. SMALLEY,

Agent.

Submitted (with observations) for the orders of Government.

CAMP CANOOMOOLOPULLY,
29th July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 29th July 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of a copy of the letter from the Board of Directors, dated 13th March, with which you have favored me.

2. The only part, on which it appears necessary for me to make any remark, is that which refers to the arrangement proposed, regarding which part of the line is to be first completed.

3. I am glad to find that we have anticipated the wishes of the Board, in commencing on the Western Coast, in so far as the very limited means placed at our disposal would admit of, as well as in concentrating our energies on the first portion of the line near Madras.

4. The only point in which, at first sight, it might be supposed we were deviating from the order of the Board is, in commencing work in the neighbourhood of Salem, near the Mooroor Ghaut, and working from there in the direction of Vaniembady.

5. Referring however to the following Paragraph, it will be seen that we are in reality acting in the way the Board desire. The Board proposed to concentrate for the present their operations chiefly on that part of the line between Madras and Vaniembady, in order to complete and open it for traffic as soon as practicable; but that during its construction, other portions of the line will be commenced, and carried on as rapidly as circumstances will admit.

6. When it is considered that the line being made here, does not in the least interfere with its construction east of Vaniembady; and that if we have done wrong in extending ourselves so far, the remedy, that of sending out three more Engineers to complete the link, is a most easy one.

7. I hope the Board will not think it necessary to confine our exertions strictly to the part between Madras and Vaniembady.

8. The roads from Vaniembady to Madras are infinitely better than from Vaniembady to Salem.

9. Regarding the Bellary line, I beg to observe, that I do not see how we can even examine it until after we had at least five Engineers sent out to take charge of Districts on the main line.

After that, we can allot any that the Board may be pleased to send to the examination of the Bellary line.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
14*th June*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to acknowledge the receipt of the letter from the Board of Directors, dated 10th April, and beg to make a few observations regarding it.

2. I am most anxious to carry out the orders of the Board and prepare the surveys of the line to Cuddapah without delay. I would however respectfully ask the Board to re-consider the opinion they have expressed, viz., that we have already enough Engineers to do this, and carry on the other works "promptly and effectually."

3. The three Engineers who have lately arrived are needed to complete the link to Salem, and the Directors only contemplate sending out one more, whose services are greatly required on the Western Coast.

4. It may be said that the three Engineers between Vaniembady and Salem are not required; but there are very strong reasons why they should not be removed.

1st. They have established themselves, are building their Bungalows, and preparing finally to mark out the line, and commence work where Government have sanctioned it. They cannot be removed without great loss of time and labour.

2d. The difficulty in procuring labour between Vaniembady and Salem, particularly on approaching the hills, will be very great; and unless this part of the line, where the works are heavy, is commenced immediately, it will be far behind when really wanted.

To remove all difficulty to execute this line as it should be, and at the same time conduct the survey of the Cuddapah line, it is absolutely necessary to have four more Engineers accustomed to the examination of country and surveying.

I beg to suggest for your approval that the Directors should, without delay, send out three Engineers from England, one to be of the 1st Class, and that Mr. Hederstedt, who is here as a Sub-Assistant Engineer, should be promoted to the grade of Assistant.

This will complete the number required.

In the meantime I will endeavour to make some arrangement by which we may begin the Cuddapah survey without waiting the arrival of the Engineers from England; but we cannot faithfully fulfil the mission assigned to us without the assistance now requested.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 209, dated the 23d June, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The Agent forwards letter from the Chief Engineer of the Railway, having reference to those from the Board of Directors in England, to their Agent at Madras dated severally the 13th March and 10th April, 1854.

2. The main points to be noticed in these letters are the expressed wish of the Board to postpone the Bangalore branch; and their desire to undertake the survey of the Cuddapah line.

3. On the former subject, the Managing Director observes* that the construction of the branch, as far as Bangalore, will be postponed till the line as far as that point (Vaniembady) is completed. Among other reasons given for this proposal, an objection is made against constructing disjointed and distant parts of the line on account of the great expense of conveying materials, &c. Though more distant, the portion of the projected line between Vaniembady and Bangalore, is not—in reference to that which lies between Madras, and the former place—more disjointed than any earlier portion of the same line. It is in fact a continuation of the line to Vaniembady.

* 13th March, 1854.

4. The Branch to Bangalore from Vaniembady is about 80 miles. The only difficulty on the whole line is the pass, the works upon which will be heavy, and take considerably more time that other portions of equal length. The expense of conveying materials applies only to the permanent way. If it were found necessary or expedient, the laying of that way on the branch in question might be deferred till the line to Vaniembady was ready to convey them; but meanwhile the Bridges and Earthworks might be proceeded with to advantage, would be executed all the cheaper from being executed deliberately, and would be all the better for having time to settle before the rails, &c. are laid.

5. If we were to proceed with the Bangalore branch now, the works constituting the formation level might be completed in 18 months, by which time the line to Vaniembady ought to be wholly, or in great part, ready to convey the Iron, &c. for it. If we do not begin the branch until the Vaniembady portion is completed, a further 18 months must elapse before we require that Iron, &c.

6. I think it of great importance to open the Bangalore branch as soon as possible. The Directors speak of the traffic from Mysore not being very great. But the traffic from, and through, the Mysore country, by way of the Palmanair pass, has been steadily increasing as the roads have improved; and besides that this work would lead us at once to a very important Terminus (Bangalore) (both in a social and political point of view); there cannot be a doubt that the traffic drawn on to the Railway at this point, from the North and West, including all the commerce of Bellary, would be very great.

7. I would strongly recommend therefore that the Board of Directors be urged to proceed with the works on the branch; leaving the supply of the materials for its permanent way to be regulated by circumstances hereafter—by the price of iron—cost of freight—and the progress made in the trunk line as far as Vaniembady.

8. Of the Cuddapah survey, I have only to observe that the preliminary examination of this line has been completed by Mr. Roberts whose report with surveys, &c., will be shortly submitted; that I am now going over the country myself, and trust, before I return to Madras, to lay that report before Government with my own observations. The Railway Company, with the important work they have in hand, have certainly no men at present to spare in the examination of a line not yet finally placed in their hands.

9. Mr. Bruce, it is observed, urges the addition to his staff of four more Engineers, three of whom he recommends should be supplied from England, the fourth being provided by the promotion of Mr. Sub-Assistant Engineer Hederstedt.

10. The Railway Company have at present a sufficient number of Engineers to carry on the line from Madras to Salem, and from Coimbatore to the Western Coast; but none either for the portion of the line between Salem and Coimbatore, or the branch to Bangalore. Allowance must be made too for possible casualties. I would therfore recommend that Mr. Bruce's application be approved by the Government.

CAMP CANOOMOOLOPULLY, 29th July, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 175.

Extract from the Minutes of Consultation, dated 10th August, 1854.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 29th July, 1854, No. 181.

1. The Right Honorable the Governor in Council fully concurs in Lieutenant Colonel Pears' view of the political and social advantages of the branch line from Vaniembady to Bangalore, and of the great importance of opening it as soon as possible; and he resolves accordingly to bring the foregoing papers under the consideration of the Honorable the Court of Directors with reference to paras. 9 to 14 of their despatch, dated 30th May, No. 14 of 1854, and to recommend that authority may be granted for at once proceeding with the works on this branch, leaving the supply of the materials for its permanent way to be regulated by circumstances hereafter.

2. Under the circumstances represented in para. 10 of Lieutenant Colonel Pears' remarks, the Government will also recommend to the consideration of the Honorable Court the application of the Chief Railway Engineer for an addition to his Staff of four more Engineers, three of whom, it is proposed, should be supplied from England, the fourth being provided by the promotion of Mr. Hederstedt the Sub-Assistant Engineer.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
29th August, 1854.

No. 287.

FROM E. SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to forward copy of a letter from the Chief Engineer of the

16th August, 1854. Railway, requesting to be allowed to appoint Sub-Assistant Engineers under the Resident Engineers "to take charge during the absence of the Engineers, and render such assistance in details as may be necessary, provided suitable men are to be found, and when the works are in such a state as to require this assistance.

2. The salary proposed is Rs. 150, with the addition of Rs. 30 for tentage per month.

3. At present there are four Resident Engineers, and one Sub-Assistant Engineer. When the line is in full operation, therefore three additional Sub-Assistant Engineers would be required.

4. As you are aware, we have, at present, three Superintendents, on high salaries, together with Inspectors on different rates of pay.

5. Mr. Bruce has not entered into detail, but I presume that he wishes to employ a better class of persons. If, however, duly qualified Engineers are to be engaged, the Board of Directors should perhaps be first consulted, especially as it does not appear to be an emergent matter.

6. The question is an Engineering one, and I wish to support the Chief Engineer in all his proper claims for assistance. But in this case I should be glad to be favored with your opinion; and would only further observe that if you consider the appointment a fit and necessary one, I think the salary proposed moderate, and such as I could recommend. In the event of the general measure being sanctioned by Government, I would suggest that application should be made for the appointment of a Sub-Assistant Engineer in each case, that it be required to be accompanied by a Statement of the qualification and character of the party recommended for employment.

7. I think too that we should bear in mind, that the expense of the present staff is very large, and that it should only be increased when it is absolutely necessary. Moreover application has been made for the services of four additional Engineers from England. With the exception of plate-laying and superintendence, the 1st and 2d Districts should soon be able to dispense with the staff now employed there.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the sanction of Government.

CAMP PALMANAIR, 11*th September*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 16*th August*, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE.

SIR,

We have at present one Sub-Assistant Engineer, and he will, I hope, soon be promoted to the higher grade.

2. The Resident Engineers are necessarily often away from their own immediate districts, superintending other posts of their Divisions, and it is desirable, when practicable

that each should have a Sub-Assistant Engineer under them to take charge during the absence of the Engineers, and render such assistance in details as may be necessary.

3. I beg to apply therefore for sanction to appoint, provided I can find suitable men, one to each Resident Engineer, when his works are in such a state as to require this assistance, salary Rupees 150, Tentage Rupees 30.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter (No. 287*) from the Agent of the Madras Railway Company, dated the* 29*th August,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. In my report of the 31st May, 1853, upon the subject of the proposed pupil establishment in connection with the Railway, I recommended that the grade of Sub-Assistant Engineer, should be admitted with a view, chiefly, of giving advancement hereafter to qualified puplis. One such Sub-Assistant, Mr. Hederstedt, has been already appointed; and lately recommended for further advancement.

2. In the accompanying letter, Mr. Bruce applies for permission to employ one Sub-Assistant Engineer to each Resident Engineer, which under present circumstances would involve the appointment of four of the former. The Resident Engineers have, under Mr. Bruce's judicious arrangements, three districts under their control, one of the three being under their own personal charge; and Mr. Bruce thinks it desirable that a Sub-Assistant Engineer—a qualified and trust-worthy man as an Assistant—though not necessarily a man of much experience, should be at his disposal to attend to his own District, and see his orders carried out at such times, as he may be himself occupied in the supervision of the other two.

The only objection I see to this proposal is in the form in which the application is made, and precedent established by it. The appointment of Sub-Assistant Engineers is recommended as a personal Staff to the Resident Engineer, while the number of the latter depends entirely on the discretion of the Board of Directors, not upon the peculiar arrangements for the superintendence of the work which Mr. Bruce has made.

I think it very desirable to have a few young men in the proposed grade and the number (four) now applied for, does not appear to be too many for the present condition of the work. I doubt if the Agent could find here that number of young men, properly qualified at present: at the same time I think one great object in the institution of the grade, would be the employment of well educated lads found on the spot.

It might be recommended to the Honorable Court, that the Agent in this country, should be authorized to entertain four young men on the salary proposed, and two or three more as the work advances, and qualified candidates for the situations could be found.

Such appointments should be made at the recommendation of the Chief Engineer, with the concurrence, in each case, of the agent himself.

CAMP PALMANAIR,
11*th September,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 208.

Extract from the Minutes of Consultation, dated 19th September, 1854.

Read the following observations of the Consulting Engineer for Railways on a letter from the Agent of Railway Company.

(Here enter 11th September, 1854.)

Resolved that the correspondence submitted with the foregoing observations be forwarded to the Honorable the Court of Directors with a view to its being laid before the Railway Board for their decision. The Government concur with the Consulting Engineer, that the Agent of the Railway Company at this Presidency might have authority to entertain properly qualified persons as Sub-Assistant Engineers on a salary of Rs. 150, and Tentage Rs. 30 per mensem, such appointments being made at the recommendation of the Chief Engineer, and with the concurrence of the Agent, and restricted to four in number for the present, a few more being employed as the work advances.

(True Extract.)

H. C. MONTGOMERY,
Chief Secretary.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
27th September, 1854.

No. 310.

FROM EDWARD SMALLEY, ESQUIRE,
Agent.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

Minutes of Consultation, 31st July, 1854, No. 168.

20th September, 1854.

1. With reference to the Despatch of the Honorable Court of Directors, dated the 30th of May, I have the honor to submit for the information of Government, copy of a letter from the Chief Engineer, bringing to notice the insufficiency of the Engineers to proceed with the survey of the Cuddapah line.

2. Under date the 2d January last, the Chief Engineer applied, for the whole of the Railway works, 18 Engineers in addition to seven already in India. Of these 18, four have since arrived.

3. On the 24th of February, the Government sanctioned this application for 18 Engineers, and resolved to bring the subject to the notice of the Honorable Court.

4. By para. 7 of the Board of Director's communication to my address, dated the 12th July, No. 27, (a copy of which was forwarded to you on the 13th instant) you will have observed that the Board had applied for authority to entertain "two more Assistant Engineers, who will be sent to India at an early period."

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

CAMP CARADICOOPUM, 14*th October*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
COIMBATORE, *September 20th,* 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to acknowledge the receipt of a copy of the Despatch from the Honorable Court of Directors, dated 30th May, 1854.

2. The only point requiring notice by me, is, I think, para. 14, in which is the following, "If the Chief Engineer is unable to prosecute the survey without neglecting other important duties, we presume that the Railway Company would provide other competent Officers for the purpose."

3. Regarding this, I beg to observe that the only obstacle to my carrying on the above survey has been, that the Directors have not sent out the assistance asked for, and required.

4. I asked for 18 Engineers so as to be able to carry on the whole line from Coast to Coast with branches, and also the Cuddapah survey; and at the time that Despatch of the Court was written, I had received *none* in answer to this application.

5. The Bengal Railway is very little longer than all that is proposed in Madras; but I think it will be found that their staff is five times more numerous than ours: leaving out of the question the staff of the Contractors, which with them is large, whereas with us that work is done by our own Engineers.

It is due to myself that our Directors and the Government should be reminded that when the line was extended from seventy miles to about nine hundred, my hands were only strengthened by an addition of four Engineers, and that the total increase up to this time has only been eight.

Would you oblige me by forwarding a copy of this letter to Colonel Pears, for the Madras Government.

I have, &c.,

(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 310, *dated 27th September,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

Government are aware that the whole of the Resident and Assistant Engineers yet appointed, 11 in number, are fully occupied upon the execution of the line of Railway between Madras and the Western Coast, and that a considerable portion of that line as well as the branches remain untouched from the want of more Engineers.

From the imperfect means of communication, that exists at present in this country, the duty which has hitherto devolved, and now devolves, upon the Chief Engineer of the Railway is a most anxious and a most laborious one. Neither with the utmost exertion on his part has he been enabled to give to the whole of works, on this sanctioned line, that appearance of forwardness which the Government desire to see.

A preliminary survey of the Cuddapah line has now been made; and should the Honorable Court sanction the construction of a line through that District, at the hands of the Madras Railway, or other, Company, nothing remains to be done, but to send the Engineers in to stake out and make the detailed survey and estimate. I should regret much to see any of the Engineers withdrawn from the Madras line for that purpose.

Report, dated the 7th October, No. 52.

CAMP CARADICOOPUM, 14th October, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 225.

Extract from the Minutes of Consultation, dated 27th October, 1854.

Read the following observations of the Consulting Engineer on a letter from the Railway Agent.

Here enter 14th October, 1854.

It appears to the Government evident that none of the present Staff of Railway Engineers can be detached for the survey of the Cuddapah line, without impediment to the progress of the line from Madras to Vaniembady, which the Home Authorities are desirous should be proceeded with as rapidly as possible; and therefore that this survey must be postponed, till other Engineers arrive, or the works now under execution are completed.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COLONEL T. T. PEARS C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 233.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

Having lately passed down the line of the Madras Railway from Trivallum to Madras, I have been led to make the following observations upon the persent state of the work, on some portion of which it seems to me that both the rate of progress, and the quality of the work done, are susceptible of improvement.

I believe your Chief Engineer is likely to pass down the line before long, and I shall be glad if you will request his particular attention to the following points.

The works on District 3 are not being carried on with that expedition and vigour, which might have been reasonably excepted after a lapse of nine months. The progress on the Poiney Bridge has been very good; but although some progress has been made in the earthwork on this District, it is not yet advancing as rapidly as it should.

I am glad to see that the amount of work done monthly is increasing; and I believe that when the Engineer in charge has gained somewhat more of local experience, neither zeal nor ability will be wanting on his part. I hope however your Chief Engineer will give his attention to the present arrangement for collecting a supply of labourers on this District.

The work performed by the Contractor at the Avadum Bridge was not good: and certainly inferior in quality to that portion which had been performed by daily labour.

The work on District 2, appeared to be generally in a very satisfactory state, the Earthwork alone falling off; but this is evidently attributable, in a measure, to the amount of rock which must be removed by blasting.

The work, performed at the Cortilliaur Bridge, will, I doubt not, afford Mr. Bruce as much satisfaction as it did myself: but it will be necessary to take the greatest care in securing the work in its present state against the effects of high floods. The precautions to be taken have reference, as Mr. Bruce will see, chiefly to the strengthening and securing the centrings; getting rid, if possible, of the necessity of intermediate supports to the trusses.

With regard to District 1, I regret to have to request your attention to the great and unaccountable delay that has occurred in the progress of the work on the 2d section. Several of the Bridges are not yet commenced. The Earthwork, in many parts, appears as if it were now, and had been for some time, at a stand still. I may point as an example to the Vapumpett cutting.

The whole section bears evident marks of having been mismanaged.

The progress on section 1, is more satisfactory; but the quality of the work is in many places questionable, I would request the Chief Engineer's attention to the turfing which is in many places bad in the quality of the material, and bad in the execution of the work, and preservation of the slopes. Many of the laterite blocks at the Umbatore cutting are inferior in quality.

Much of the ballast in use, both there, and near Conoor, appears to me very inferior; it is little better than clay, taken out probably of the same pit with better ballast, but without proper care and discrimination. The sleepers lying in such stuff as this will be exposed to the double risk of rot from continued wet, and destruction by white ants. The best protection against the latter will be a good clean dry ballast, gravel or sand.

Mr. Bruce will observe, near the 8th mile, a nine foot Bridge, which is cracked in several places, and evidently badly built, and which he will probably agree with me had better be removed.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
21th October, 1854.

(True Copy.)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 1*st November,* 1854.

FROM G. B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge your letter, No. 415, with that from Colonel Pears.

2. Before replying in detail to the observations of Colonel Pears, allow me to observe that I never went along a line of Railway in my life, where I did not see much very much that appeared susceptible of improvement, and that I did not feel annoyed; here and there, by want of energy, or the exhibition of carelessness on the part of some of those employed.

3. So that however you may feel startled at what may appear to you evidences of the lax performance of duty, I know by long experience that it is to a great extent no such thing, but only the almost inevitable course of events, the natural short-comings which no mortal man can entirely remove, however anxiously he may strive to do so.

4. It is a pity that the remarks, of the Government Engineer, should assume, on such subjects as these, so official a shape, just because they are misunderstood by non-professional men.

5. If every time I tell an Engineer he is getting on slowly, doing his work in any particular badly or too expensively, this was a matter of official record; our Directors would stand aghast and think that instead of an efficient staff, I had a set of lazy useless men, which I am happy to say is far from the truth.

6. That there are evils and short-comings, I most willingly admit: but they are the exception and not the rule.

7. Mr. McMaster is doing more than 1,32,000 Cubic yards, per month, which Colonel Pears must admit is very good progress indeed: and now that he has the section of the whole District, it will doubtless be still higher.

District 3.

8. I do not think we shall need any special arrangements for procuring labour on this District. If there was a prospect of our getting rails, I should not scruple to go to any expense to push on the work of District 3, to overtake District 1 and 2, as it is most important to open to Trivellum.

9. Avadum Bridge is being done by daily labour.

10. Section 2, of District 1, is decidedly unsatisfactory. This shall not continue. It is rather in quantity than quality they are deficient; but there no doubt will be some bad ballast: it is scarcely possible entirely to avoid it; this shall however be carefully watched.

11. Every Engineer ought to be in the centre of his District; but Mr. MacNair's Bungalow being uncomfortable or unsafe, he removed to Perambore.

12. I will make any arrangements which may be necessary regarding the Superintendence of Section 2, District 1; but I should not wish to appear to relieve the Engineer too much of responsibility by adverting in this letter to the Inspector.

13. I have never heard of the 9 feet arch at 8 miles being bad; but shall see after it.

14. In this and in other letters, Colonel Pears speaks as if our Engineers were men of no experience, I am aware of the old Indian prejudice which ascribes all wisdom to men, who have spent half their lives in this country, and looks with something bordering on pity on those who have not had this happiness; but it must not be forgotten that, though never ceasing to be learners, as sensible men never will, our Engineers come here rather to apply the experience, already obtained in a better school of Engineering than India has hitherto been, than to obtain it.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

To THE CONSULTING ENGINEER.

For information with reference to his letter, dated 24 October, 1855, No. 233.

Submitted (with observations) for the information of Government.

MADRAS, 16*th November,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

On a letter from the Chief Engineer of the Madras Railway, to the Agent, dated the 10th November, 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The accompanying letter is a reply to a communication, copy of which is submitted, made by me to the Agent on the subject of the state of the works on the Railway on the three first Districts.

Dated 24th October 1854, No. 233.

2. I consider it proper as a general rule to pass, without notice, observations such as are found in the 14th para. of Mr. Bruce's letter. On the present occasion, however, it appears due to the Gentlemen referred to, as well as to myself, to state, that I am not aware of having in any instance spoken of the Engineers on the Railway "as men of no professional experience."

3. Had it been within my province to discuss the qualifications of any servants of the Railway Company, it would have been, nevertheless, wholly unnecessary for me to point out in the case of the younger men the impossibility of their being men of much experience; while in regard to most of those in the higher grades I should certainly not have hazarded an opinion with the limited opportunities I have yet had, of forming any opinion of their professional qualifications. My business is with the work done; and I trust I need not assure the Government that it has been, and will be, my endeavour, by all the means in my power, to aid the Chief Engineer of the Railway, and his Assistants, in conducting, to a satisfactory issue, the important business they have in hand: that none will rejoice, more than myself, to find their works executed in a style worthy of that great school of Civil Engineering, which these Gentlemen here represent.

MADRAS,
16*th November*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort. St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 244.

Extract from the Minutes of Consultation, dated 24th November, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 16th November, 1854.)

Ordered that this correspondence be submitted to the Honorable Court for their orders, with reference to the despatch from this Government of the 22d Instant, and that the Honorable Court's attention be called to the tone of Mr. Bruce's letter of the 1st Idem.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

ENGINEER DEPARTMENT.

No. 338.

FROM THE MILITARY BOARD.

TO LT. GENL. THE RIGHT HON. SIR HENRY POTTINGER, BART., G. C. B.

Governor in Council,

&c. &c. &c.

RIGHT HONORABLE SIR,

Vide Mins. of Cons. No. 60, 24th June 1853, and No. 99, 16th August, 1853.

Consequent on the Railway Company urgently requiring the Coal sheds, belonging to the Peninsular and Oriental Steam Navigation Company, the Agent of that Company was called on to hand them over to the Railway Company; and we have the satisfaction to report to your Excellency in Council, that Mr. Franck, the Agent of the Peninsular and Oriental Company, very readily exerted himself to comply with the call, and at once removed the coals stored in the sheds.

2. We have received intimation from the Agent, that the whole of the sheds were cleared out on* Monday last; and we daily expect to receive a report of the sheds being in use with the Railway Company.

* 5th December, 1853.

3. In laying before your Excellency in Council, the Memorandum, from the Agent of the Peninsular and Oriental Company, of the valuation and charges for these sheds, as per margin, and for the removal and deterioration of the coal, we beg to observe that the only items of the compensation claimed by the Peninsular and Oriental Company, requiring to be examined specially, are those respecting the rise in price of timber, amounting to Rupees (288) two hundred and eighty-eight; but this may be expected from the existing market price of wood, required to be purchased, for the Peninsular and Oriental Company's new coal sheds, erecting on a new site, wood having risen (4) four Annas a cubic foot higher than it was a few months since. The charge for moving the coal, Rupees (1,218) one thousand two hundred and eighteen, and (1,800) Rupees one thousand and eight hundred, for deterioration, may be considered only fair and legitimate charges, considering there are 3,000 Tons of coal exposed and deteriorating, consequent on not having been able to put coals under the sheds, since the date the sheds were ordered by Government to be made over to the Railway Company. As special instructions were issued by your Excellency in Council for the Peninsular and Oriental Company to resign the sheds to the Railway, at a fair valuation, we solicit the authority of Government for payment of the above charges, and valuation, fixed on the buildings.

	RS.	A.	P.
Original cost of four sheds..........	5,185	8	2
Original cost of incomplete sheds.	1,913	12	6

We have, &c.,

MILITARY BOARD OFFICE,
Fort St. George,
20th December, 1853.

(Signed) F. F. WHINYATES, BRIGR.
Commandt. of Artillery.
" A. COTTON.
" G. BALFOUR, MAJOR.

(True Copy.)*
(Signed) G. C. MONTGOMERY,
Chief Secretary.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 48.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort Saint George.

SIR,

No. 171, dated 2d December, 1853.

1. I have the honor to acknowledge the receipt of an Extract from Minutes of Consultation, as per margin, respecting the terms upon which the coal sheds upon the Northern Esplanade in Black Town, should be made over to the Railway Company.

2. According to the terms of contract, entered into between the East India Company, and the Railway Company, it appears that the former have undertaken to give, free of all charge, whatever ground may be required by the latter, whether for the line or for the stations.

3. It appears, therefore, that whenever buildings are found standing upon any land thus required, the Government may be called upon to remove them, free of all charge to Railway Company. It would rest with the Government to arrange for their purchase; and in the event of their being obliged to buy them outright, to pull them down, and dispose of the materials to the best advantage. Occasionally buildings, so situated, as in the present case, might be found temporarily convenient to the Railway Company; and, in such cases, I conceive that it would be fair to both parties—liberal indeed to the Railway Company to give the buildings (the Government having purchased them in the first instance) over to them, on payment for the materials, at a fair valuation. The Railway Company—would thus enjoy the use of the buildings for a time; and for that advantage would have to pay the expense of ultimate demolition, and whatever loss might arise upon the sale, or other application, of the materials.

4. I consider, therefore, that it would be fair and reasonable, if the Government would instruct the Military Board to cause a valuation to be made of the materials of which these buildings are composed; that such valuation should be transmitted by me to the Agent for any remarks he may feel inclined to make: and that if he has no objection to offer, the buildings be made over to him, at that price, and brought on his return of "dead stock."

5. I would recommend that the same system be pursued throughout; and that wherever buildings stand upon the ground required by the Railway Company, the Officer, entrusted by Government with the duty of getting possession, should, before removing them, ascertain whether they are likely to be of any use to the Railway Company, and make them over, if required, upon these terms.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP, COIMBATORE,
26th December, 1853.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 15.

Extract from the Minutes of Consultation, dated 17th January, 1854.

Read the following letters.

FROM THE MILITARY BOARD.

(Here enter 20th December, 1853, No. 203.)

FROM THE CONSULTING ENGINEER FOR RAILWAYS.

(Here enter 26th December, 1853, No. 8.)

1. The Right Honorable the Governor in Council approves of the course proposed by the Consulting Engineer to be adopted in cases where the buildings on the ground to be made over by Government to the Railway Company may be suited for the temporary or permanent use of the Railway Company; and he resolves to authorize its adoption by the Collectors entrusted under the orders of Government of the 3d May last, Nos. 22 and 23, and 6th Instant, No. 4, to make overland for Railway purposes.

2. In the present instance the Military Board will cause a valuation to be made of the materials of the coal sheds which the Railway Company desire to retain, and forward it to the Consulting Engineer, who will arrange for the payment of the amount in adjustment of accounts.

3. The letter from the Military Board, dated the 20th Ultimo, No. 338, will be referred to the Consulting Engineer.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 5.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

SIR,

I have the honor, with reference to an extract from Minutes of Consultation, No. 15, dated 17th January 1854, para. 3, to submit the following observations, upon the compensation which it has been proposed by the Military Board to give to the Peninsular and Oriental Company, on the occasion of there being called upon to surrender the coal sheds on the Royapooram Esplanade.

Financial (Railway) Department.

A	Rupees	5,185	8	2
,,	,,	1,943	12	6
B	,,	288	0	0
C	,,	1,800	0	0
D	,,	1,218	0	0

2. The several charges for original cost (A), and for the increase in the price of timber (B) appear just. The claim on account of deterioration of coal (C), and that for expense of moving (D) appear to me to be, in the former case, questionable, in the latter, untenable.

Extract Min. of Cons. No. 858, 24th Sept. 1850.

3. The Agent was permitted to construct those sheds—the coal lying at the time in the open air—under the stipulation of removing them at any time the Government might require. It is clear, I think, that the Government are not answerable, therefore, either for the cost of such removal, or for the effect it may produce upon the coal.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
10*th February*, 1854.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 35.

Extract from the Minutes of Consultation, dated 14th February, 1854.

Read again the letter from the Military Board dated 20th December, 1853, No. 203.

Read also the following letter from the Consulting Engineer for Railways.

(Here enter 10th Februray, 1854, No. 39.)

The Right Honorable the Governor in Council concurs in opinion with the Consulting Engineer, that the Government are not responsible either for the deterioration of the coal or for the cost of its removal, and that the claim on these accounts is therefore inadmissible. The other charges for the original cost of the coal sheds, and for the increase in the price of timber, as noted in the margin appear to be proper, and sanction is accordingly granted for the disbursement of the amount, viz. Rupees seven thousand four hundred and fifteen, Annas four and Pice eight.

Original cost of 4 sheds............	5183	8	8
,, ,, of 2 incomplete sheds	1943	12	6
Increase in the price of Timber...	288	0	0

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

MADRAS RAILWAY, AGENCY OFFICE,
15th February, 1854.

No. 47.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

14th Feb. 1854. With reference to the accompanying copy of a letter from the Chief Engineer, I have the honor to request you will be good enough to adopt such measures, as may appear proper, for giving effect to the requisition therein contained.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY,
Madras, *14th February*, 1854.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I understood that the ground sanctioned by Government, as the site for the Madras Station, was available for our use.

2. I find however that, instead of any attempt being made to clear the ground, and allow our works to be begun, that almost daily fresh supplies of timber are being landed, in spite of the remonst:ances of the Railway Peons.

3. May I beg that you will represent this to Government, and desire that Mr. Elliot may be authorized to prevent the further occupation of the ground, required by the Railway Company.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 19.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In reply to your letter, No. 47, of the 15th Instant, I have the honor to request you will be good enough to call upon your Chief Engineer, to state whether any and what portion of the station ground should, to meet the convenience of the Railway Company be first cleared.

There are difficulties in getting the people, proprietors of huts, timber merchants, owners of firewood, &c., to move off at once. But if any particular portion be indicated wherein your Engineers will at once set to work, attention might be given to that portion immediately; and the commencement of work would not only prevent the people returning to it; but would serve as a hint to their neighbours to prepare to move too.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
18th February, 1854.

ENGINEER DEPARTMENT.

No. 6676.

FROM THE MILITARY BOARD,

TO THE CONSULTING ENGINEER FOR RAILWAYS.

SIR,

Referring to your letter, No. 34, dated 16th June, 1853, I am desired by the Military Board, to bring to your notice, that some progress has been made towards clearing the site intended for a Railway Terminus; and as no report has yet been made to Government, probably it is desirable to lay before the Government a report on the area and arrangements connected with the site, and the Board will be glad to be favored with your views thereon. Nearly all the buildings of any value have been settled and vacated and are now in course of demolition; the coal sheds have been given over, and arrangements are in progress for clearing away the firewood, fishermen's huts, and to prevent the landing of logs of wood. There are however difficulties in respect to the firewood, of which the stacks contain about 10,000 tons; and the removal of the same being costly compared with value, the merchants are unwilling to move, and, if the Railway authorities could aid in any way in respect to giving the firewood merchants relief, it is desirable. A site is in preparation for the firewood stacks.

The fishermen's huts can be removed in one week from the date of receiving a requisition from the Railway authorities that the ground is absolutely needed; but the people are poor, a useful class, have some claims on Government; and although compensation can easily be given, yet the Marine authorities consider it of great importance to keep the boatmen collected on one spot, and this spot it is difficult to find.

The landing place of logs of wood, for sale, but not for stacking, is close to the Railway Terminus; and it is somewhat difficult to find another place for landing the timber; but of course the removal of the huts, firewood, and prohibition about landing logs of timber must all be done, if the Terminus be urgently needed for the Railway, and requisition made.

It would however be a public convenience to allow all to be done gradually; and the best course is to have the ground enclosed as speedily as possible.

Both the Chief Engineer and Barrack Master will give every assistance in their power to give the Railway authorities possession of the land; and when once given over, it had better be enclosed, and probably to prevent disputes, on the very day the transfer is made.

MILITARY BOARD OFFICE,
Fort Saint George,
18*th February*, 1854.

I have the honor, &c.
(Signed) A. H. HOPE,
Secretary.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 36.

TO THE SECRETARY TO THE MILITARY BOARD.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 6676, on the 18th February regarding the ground required, and granted by Government, for the Madras Railway Terminus.

The Board feel it desirable to lay before Government a report on the area, and arrangements connected with the site, and wish to be favored with my views thereon.

I do not quite understand the Board's wishes as to my views. The superficial extent of the piece of ground is shown by the plan forwarded to the Board with my letter of the 16th June 1853, a plan which was returned for correction to the Chief Engineer of the Railway, and finally forwarded direct to the Chief Engineer by the Agent during my absence, and at my request.

The area of the stationed ground, according to the plan, measures 21 cawnies, 21 grounds, and 567 feet.

The ground it is proposed by the Railway authorities to enclose with a wall, and to erect sundry necessary station buildings within the enclosure. The space, left between the wall and the sea, amounts to 3 cawnies, 4 grounds, and 2,301 feet. A public road runs along this; and, though not required for Railway buildings, it is of course desirable for the public, as well as for the Railway Company's convenience, that it should be left clear. It is to be wished that the whole of the station ground should be cleared as soon as possible, in order that the Railway people may level it, and commence upon the buildings.

The Board observe that the fishermen's huts can be removed in a week. I was not aware that any further requisition from the Railway authorities was necessary upon the subject, and would certainly have made it, but, from the tenor of the Government order of the 24th June last, No. 60, paras. 3 and 5, I imagined that the space required would be cleared as soon as practicable, and that no further representation on my part, or that of the Railway authorities, was necessary.

The removal of the firewood, regarding which the Board now observes there are difficulties, may perhaps be hastened by the Railway people beginning work wherever a clearance is once made. To this end, I would request the Board to cause the fishermen's huts to be moved as soon as possible. The line itself runs right through them; and as this portion of the line is partly bank, and partly cutting, and it is intended to raise the former from the latter, that part of the work cannot even be commenced till the huts are moved.

I beg to observe that the wood merchants appear to have asked only till the 1st of March to move their firewood. I am informed that none has yet been moved; and I should so judge from the appearance of the stacks. The Chief Engineer of the Railway is now beginning on the compound wall where he can, but there are portions which he cannot carry on until the ground has been given up to him, by the removal of property, of one kind or another, now upon it.

I have the honor, to be, &c.,

MADRAS,
21st February, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 82.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to request that the plans and estimates of the proposed Station buildings at Madras may be forwarded to me for submission to Government with as little delay as possible. I have observed preparation for the commencement, as it ap-

pears, of these buildings on the Terminus ground near Royapooram; and I therefore take this opportunity of requesting that the buildings themselves may not be commenced, until the Government shall have seen and approved of the plans.

It appears to me indeed to be no longer necessary, that any portion of the work should be commenced, as it has hitherto been, in anticipation of the sanction of Government.

The three first Districts may be considered now fairly in progress; the Engineers beyond find abundant occupation in surveying and staking out their respective portions of the line; and, under present circumstances, I do not anticipate that any serious delay need result from deferring the commencement of your works in future until the plans and estimates have been submitted to Government.

In the case of a large Bridge as that at Trivellum, the position and character of the work having been approved, there can be no objection to the collection of materials while the plan and estimate are under preparation. Temporary bungalows also may be considered as already sanctioned, for every District, whereon the Engineer's staff is actually employed.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
2d May, 1854.

ENGINEER DEPARTMENT.

No. 203.

FROM THE MILITARY BOARD,

TO THE CONSULTING ENGINEER FOR RAILWAYS.

SIR,

I am desired by the Military Board, to acquaint you that the Chief Engineer's Department will hand over to the Railway the ground cleared of huts on the north side of the Railway Terminus; and the Board request that the transfer may be carried into effect, as early as possible, on receiving from you an intimation of the arrangements being made for the transfer.

I have, &c.,
(Signed) A. H. HOPE,
Secretary.

MILITARY BOARD OFFICE,
Fort St. George,
6th May, 1854.

MADRAS RAILWAY AGENCY OFFICE,
3d May, 1854.

No. 131.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to forward copies of two letters from the Chief Engineer of the Railway with Plans* for a Terminus station near the Beach at Madras. I have kept them until I received the estimates, but as those have not yet come in, I think it better not to delay sending them.

20 and 22d March, 1854.

* Five.

2. I am inclined to think that the Engine house, Work-shops and Store Ware-house had better be built at Peremboor, or at some place distant from the sea.

3. There is plenty of room for building a Bungalow for the Station-Master within the Terminus range, and probably a detached building would be most suitable. There is a convenient space on the South side.

4. So far as I can judge, I think Mr. Bruce has provided ample room for every

purpose; but not too much, if you look forward to the period when the whole line shall be in operation.

5. If the Engines are kept at Peremboor, it will be very easy to signalize when one is required at the Beach. Peremboor may be considered as a part of Madras; and it is, I believe, sufficiently distant from the sea shore, to be free from the injurious effects of the sea air upon iron.

6. The allotment of rooms in the office can be readily made hereafter.

7. An iron railing instead of a dead wall erected on the east side would add to the appearance of the building, make the lower rooms cooler, be equally secure, and present a better view from the sea.

8. Mr. Bruce has only placed two lines of rails for the starting and incoming trains, for washing carriages and for the formation of trains. Would not three or even four lines be better?

9. A pair of additional switches appear to be required about the west end of the Terminus for the passenger trains coming inwards to the ticket platform.

I have the honor, Sir,

Your most obedient Servant,

(Signed) E. SMALLEY,

Agent.

MADRAS RAILWAY,

Madras, 20th March, 1854.

To EDWARD SMALLEY, ESQUIRE,

Agent.

SIR,

I have now the honor to forward to you several plans of the station proposed to be built at the Terminus near the Madras Beach.

No. 1. "Ground plan" shewing the general arrangement of buildings, their position as regards each other and the sea.

No. 2. "Elevations and plans" of the main building.

No. 3. "Elevations and plans" of locomotive stables, and repairing shops.

No. 5. "Elevations and plans" of water tank.

2. The copying of these goods warehouse has not yet been finished, but it will be forwarded in a day or two.

3. The estimate is not quite finished; but I thought it advisable to forward the plans without waiting until the estimate is ready.

4. In laying down the plan for this station, I have borne in mind that our principal passenger-station will probably be near the Commander-in-Chief's bridge; and I have accordingly only provided for the two lines of rails under the roof covering the passenger's platform.

5. As this will however be the principal place of business, and the head-quarters of the Company, I thought it advisable to make the arrangements for Office accommodation somewhat extensive. I have not attempted to make any specific allotment of the rooms, as this will be better done afterwards. Should it be found desirable at any time to extend the covered way for passengers, which I do not anticipate, it can be done either by making it longer, or by removing the carriage shed and putting up another

roof of the same size as that which I have shown, covering the passenger's platform; this will double the accommodation if necessary.

6. The Goods Warehouse is designed as a series of buildings, which can all be built at one time, or singly, to be added to as required. There is here room for extension to a very considerable extent without interfering with the existing buildings. It is also conveniently situated for access to the Beach, and for receiving all goods either coming or going on board ship.

7. The Engine shops I propose to place on the South side of the line, as shown in the plan. There are some objections to having shops so near the sea, but all things considered, I do not think we can do without shops of considerable extent at Madras: these are all buildings of single story, and designed as economically as is consistent with stability and efficiency.

8. It is proposed also to build within the station wall, bungalows for the use of the work people connected with the line.

9. There are many detailed drawings necessary: these will be prepared as the work proceeds.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

MADRAS RAILWAY,
Madras, 22d March, 1854.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to hand to you the drawing of the Goods Warehouse for the Madras station referred to in my previous letter.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 93.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter of the 3d Instant, No. 131, forwarding a plan of the proposed Station building at the Madras Terminus of the Railway, and I have to offer the following observations and suggestions thereon.

Mr. Bruce proposes a building with ground and first floor, consisting of 28 rooms in all, with verandahs, &c. The buildings are arranged as forming two sides of a parallelogram, the principal portion facing south, the remainder fronting the sea.

The amount of accommodation for mere office seems to be very large, and it would be more satisfactory to Government if explanation could be afforded of the necessity of so much. Either the several rooms might be marked off to particular purposes; or at

all events, a statement should be furnished, showing, according to your experience, the various purposes for which separate apartments are likely to be required.

I think it would be an improvement, if more use was made of the rooms above and below on the sea front. Every one here seeks a sea front; giving him the full benefit of the cool breeze. It may be necessary to have certain office rooms along side of the rail and the platform; but there is no reason why the waiting room at least of the first class, their booking office, your own and the Engineer's offices, &c., should not be on the sea face. It may not be necessary to make any important alteration in the plan, and I therefore do not return it, but enclose a sketch copy of the sea front.

The position of the arch-way with reference to the two lines of rails is certainly unsightly; though I am aware that with respect to the entire shed it is central. I think this might be altered by making the double line of rails mark the centre of the front; having the one arch without the two side arches, to span exactly the space occupied by the double line of rails, I think it would be better, however, if three lines of rails were allowed with a platform on each side: the roof over each platform might be separately supported on pillars, the trussed roof spanning only the lines of rails.

The platform might be with advantage continued round beyond the termination of the rails; and a similar platform continued under the arch-way with a dividing railing and a porte cochère in front. This might be made the principal entrance. Passengers entering under the arch would pass into the verandah to their right, and into the booking office, and thence by the platform to the waiting room on the opposite side. A very good room might be built over the porte cochère.

I have made these suggestions with the view of adopting the plan submitted by you; but I think it would be better if even a greater portion of the entire accommodation could be arranged on the sea face. I think throughout the building, there should be more doors—fewer windows.

Some of the rooms, as at present divided, those for example marked "Gentlemen's waiting room" and "Ladies' ditto" would be insufferably hot. The passage which runs through the middle of this side of the building seems too narrow. It is only nine feet.

I do not see any arrangement of pipes, &c. in connection with the water closets; but if the Indian system regarding them is to be followed, their several positions on the plan will not do.

The 3d and 4th class booking office and waiting room might be placed in the range running parallel to the line; but here, as elsewhere, I think you will do well to reflect upon the excessive heat of this place, and substitute good large doors for the many windows which appear in the plan.

I agree with you in thinking that there should be iron railings between the gates on the east side; and the same, I think, would be preferable to a wall for the second inner enclosure wall around the Station building.

Both for appearance and comfort I think the principal entrance should be at the east side. I concur with your Directors in thinking that the workshop and engine house should be at Perembore, and I beg that the plan may be limited in extent to what your Chief Engineer considers necessary for the mere repairs of stock working this end of the line. I have no doubt that you will find it hereafter much more convenient to have your grand workshops far up country, probably in the Salem District.

I have, &c.,

MADRAS,
10*th May*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

(True Copy.)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
22d May, 1854.

No. 158.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. With reference to my letter, No. 131, of the 3d instant, forwarding the Plans of the Terminal station, I have the honor to transmit the Estimate of the buildings amounting to Rupees 3,44,649. I also forward a copy of the communication from Mr. Bruce which accompanied it.

9th May, 1854.

2. Your observations and suggestions respecting the main building were communicated by me to Mr. Bruce on the 17th Instant. So soon as Mr. Bruce sends me a revised Estimate in consequence, a copy of the same shall be forwarded to you.

10th of May 1854.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
22d June, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 19th May, 1854.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have the honor to forward to you the Estimate for the building of the Terminal station on the Beach at Madras, including all the contingent charges incident to such a work.

2. The total amount is 3,44,649 Rupees. This a large sum, but I do not see how it can be materially reduced. In laying out a station such as this, a large portion of the expenditure is in fence-walls earthwork, ballasting, and plate-laying, which cannot be avoided.

3. There are six divisions in the Goods Warehouse making in all extensive accommodation. As however it remains to be seen how this traffic will develope itself, I would propose only to build three in the first instance, though I have made out the estimate for six.

4. Timber is excessively dear, which necessarily adds to the estimate.

5. Throughout the estimate generally I have adopted market prices, but as we are doing the work ourselves, I expect to effect a considerable saving, especially in the doors, windows, and other small wood work, which form a heavy item in the expense.

6. I have gone upon the supposition that the iron work we require, which is not a large quantity, can be got in this country. If however it cannot be procured on favorable terms, it will be easy to get it from England.

7. In preparing these plans and Estimates, I have been guided by the conviction that Madras must necessarily be one important station for Workshops, owing to its proximity to the coast, from whence most of our supplies are derived, and to the command of labour which can at all times be insured.

8. The objection arising to their being so near the sea, will not, I think, apply to the case of Workshops, where the machinery and all belonging to it must be kept constantly clean. I am not aware that the machinery in the Mint suffers from the action of sea air, and we have the instance of the large quantity of arms stored in the Arsenal without any injurious effect, further than perhaps requiring a little extra labour to keep them clean.

9. Where iron railings or old guns are left constantly exposed without any care being taken of them, they of course are speedily damaged; but there is no fear of like consequences in the case of Railway workshops.

10. The advantage of having all as much as possible concentrated outweighs in my opinion any advantages which would be gained by removing them a few miles out of Madras.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY AGENCY OFFICE,
7th June, 1854.

No. 181.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. I have the honor to acknowledge the receipt of your letter of the 10th Ultimo, regarding the Terminal Station buildings at Madras.

2. I beg now to transmit copy of a letter which I addressed to the Chief Engineer of the Railway on the subject, and copy of a Memorandum which accompanied it. The reply of Mr. Bruce I have also the honor to forward with the Plan alluded to.

17th May, 1854, No. 203.
30th do. do.

3. I take the liberty of sending also a rough sketch prepared merely to show, in reference to the Memorandum, my view of the several rooms and the use to which they should be appropriated, and also a List of offices which I suppose will be required to be provided.

4. It will afford me pleasure to call at your office to explain personally the alterations which have been suggested, and, it may be, to save further reference.

I have, &c.
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
22d June, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY AGENCY OFFICE,
17th May, 1854.

No. 203.

To G. B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

10th May 1854, No. 93.

1. With reference to your letter of 20th March forwarding plans for the terminal station on the Madras Beach, I have the honor, to

transmit the accompanying copy of a letter from the Consulting Engineer, with a sketch which accompanied it.

2. I do not consider the amount of accommodation too large, and I shall be able, I believe, to satisfy to Government on that point. In the accompanying tracing the different offices are marked in a sufficiently accurate manner for present information.

3. It is certainly desirable to consider the climate, and to make the rooms as cool as possible, and with this view there should be no solid division between the rooms facing North and South. If necessary hereafter, a wooden partition might be constructed to divide a room, if more accommodation was wanted.

4. I agree with Major Pears that it would be better to allow three lines of rails, with a platform on each side, the roofs being supported as suggested. I would continue the platform round the east end of the rails.

5. I do not however agree with Major Pears about the Booking Office. I think it could not be better than where you have proposed to place it. If his other suggestions are approved of, I believe that Major Pears will not press any alteration in the Booking Office.

6. A southern entrance for passengers inwards, and an eastern entrance for passengers outwards, each with a porte-cochère, would make the arrangement complete. In this view it is not necessary to consider the narrowness of the passage through the South side of the building.

7. All things considered, I suppose it will be best to have the workshops and Engine house at Perambore.

8. The accompanying Memorandum and tracing will put you in possession of the particulars of the proposed alterations, as well as point out the proposed use of the several offices.

9. I could have wished that these alterations had been considered at an earlier period before the Plans and Estimates were completed, and I much regret the additional trouble which will be given you; but in a great building there are many points requiring deliberation and careful consideration; points which do not strike a person at once, and on a slight view. It is certainly desirable to have the Terminal station as perfect and comfortable as we are able to make it, although we arrive at some of our conclusions on the subject rather late.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

Memorandum regarding the Terminal Station at Madras.

1. The alterations proposed are as follow. All the rooms to extend from the South front to the platform, in order to give more air, and make the rooms cooler: partitions can at any time be put up, should it be found necessary, to divide any of the rooms.

2. The Ladies' waiting room, as marked on the original plan, is considered too hot. We have therefore placed it with a front towards the sea, where, with three large windows towards the sea, and two towards the South, it would be very cool. You will perceive that I have marked the names of the different offices in my rough sketch accompanying this.

3. There are two rooms marked "Ladies' waiting room," in the second of which should be placed two water-closets. A partition might be placed quite across the room, and a water-closet in each corner. An internal communication should be made between

these two rooms, besides two doors to each from the platform. It would also be advisable to have a door placed between the gentlemen's waiting rooms, besides two to each on to the platforms, and of course two large windows to each room the whole length of the building, facing South, with two doors on to the platform, excepting the parcels office. One or two water-closets should also be placed in the gentlemen's waiting rooms.

4. The water-closet next to the room marked "Parcels Office" should be for the use of the Clerks, and should communicate immediately from the platform without any communication with the offices on each side. I should say that these water-closets, five altogether, would be amply sufficient down stairs.

5. There should also be three lines of rails instead of two, and a platform for the passengers inwards to land upon; this would prevent much confusion between passengers coming in and going out. This of course would cause the ticket-platform to be altered to the opposite side. A platform across the end of the station would be also needful to connect the outward and inward platforms: this would cause the two rooms marked "Waiting rooms for passengers inwards" to be thrown further back. Of course the passengers would make their exit out of the East front of the building.

6. It would also be advisable to have a second staircase somewhere in the North part of the building, as there could be the Agent's offices: one might be run up by taking a little off the end of the room where I have marked "Staircase."

7. Instead of a wall in front of the building Eastward, a light iron railing would look much better.

8. Upstairs I have sketched the rooms from front to back similar to the one below. I think that a water-closet in the centre of the long range of rooms in the passage where I have marked it, would be sufficient for that part, but there should also be one near the Agent's offices. I think one might conveniently be fixed somewhere at the top of the proposed stairs at that part of the building.

9. It would also be advisable to have the verandah to continue round the west side of the Agent's offices, as that will be a fearfully hot room without some protection.

10. It will be very advisable to ventilate all the rooms as much as possible, and that, I think, could be done by placing two doors in every room, excepting the Booking office and Parcels office, below on to the platform, and large windows at the opposite end. The room marked "Record room," upstairs, might be as it is: the other rooms might all of them have two doors leading on to the verandah, and large windows at the opposite ends. I think that two water-closets would be sufficient upstairs, unless you could conveniently place another without its having immediate communication with any of the rooms.

11. I have placed the Fire proof closet in the room nearest the sea marked "Accountants' office." It would have been better at the other end of the room, on account of the room door, but I placed it there thinking that you could better get a foundation for it by having the water-closets underneath: it need not go across the entire width of the room, but space may be left for a door to be opposite the windows on the North for a free current of air.

(Signed) E. SMALLEY,
Agent.

17th May, 1854.

(True Copy.) (Signed) E. SMALLEY,
Agent.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 30th May, 1854.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

1. I have the honor to acknowledge the receipt of your letter, No 203, with the enclosures regarding the Terminal station, Madras.

2. Though I could have wished that the alterations had been proposed earlier, yet I do not grudge any labor spent in endeavouring to make the station as perfect as possible.

3. The objections to the plan as originally submitted by me, may be stated as follows.

1st. There is not sufficient use made of the sea front.

2d. There should be three lines of rails instead of two.

3d. There should be two platforms instead of one.

4th. There should be no divisions across the rooms parallel to the North and South wall.

5th. It is desirable to make more doors and fewer windows.

6. It is not desirable to build the Workshops at the Terminal station, but at Perambore.

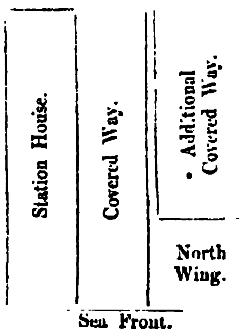
4. There are minor topics included in the above classification.

5. I shall refer to these in their order.

1st. It would have been easy to have designed a building with its entire front facing the sea, but it must be borne in mind that the Railway is at right angles to the Beach, and you cannot build a Railway station at right angles to the Railway without greatly increasing the cost, as then no use can be made of the walls of the building itself for supporting the roof over the Railway. The consideration of expense therefore, added to the greater practical facilities afforded in working the traffic when the offices are parallel to the line of Railway, prevented me from proposing what, I am fully aware, would make the more imposing design.

2d. I have in a previous letter explained that I do not anticipate the requirement for passenger accommodation will be great at the station on the Beach, when we are to have a central station in Madras.

Under this impression I proposed only two lines of rails to be covered in, and intended, should circumstances afterwards prove that I had under-estimated the accommodation required, to complete the rectangle, and cover in another space with a 48 feet span as shown on this sketch.



3d. In a terminal station with moderate traffic, I think that two platforms on opposite sides of the Railway retard rather than facilitate business, cause confusion rather than prevent it, and greatly increase the labor of the servants of the Company in conducting the traffic.

An additional platform could at any time have been added to the West of the present ones parallel with it.

4th. It is not usual even in India to build what would be called at Home "single houses," that is with only one room from back to front. We can of course do it here if it is desired, but it must be at a sacrifice of accommodation without gaining any important counterbalancing advantages.

5th. I think it is desirable to have no doors opening on to the lower verandah, except that into the Booking office, to secure a proper amount of privacy and security in the public offices.

There is no doubt that there are cases where doors may be substituted for windows on the platform side, but except in the case of waiting rooms, the fewer doors there are into the offices the better ; thronged, as the platform will frequently be with passengers and others standing about.

5th. I have already, in answer to the Board of Directors, stated the reasons why I think the shops will be better on the Beach than at Perambore, which, it strikes me, has all the disadvantages arising from proximity to the sea without the advantage of being conveniently placed for a general controlling management.

6. In that letter I pointed to the instances of the Mint and the Arsenal, where machinery and stands of arms are kept, and expressed the opinion that in a manufactory, where everything is in motion, or carefully attended to, there will not be the destruction which is found in the case of old guns and neglected railings.

7. I have in that letter also stated my reasons for considering that there must be workshops of considerable extent in Madras, though no doubt, they will also be required in the centre of the line, and on the western coast.

8. The facilities which Madras supplies for obtaining labour and materials cannot be overlooked.

9. Anticipating that I shall be required to carry out the views of Government in their most important particulars, I have given the matter my best attention, and would submit the following observations.

10. Increased accommodation in rails and platforms.

11. There cannot be three lines and two platforms, unless they are all spanned by one roof, for if columns are placed, as proposed, by the edge of the platform, they will endanger the doors of the carriages and the lines of passengers, and to have them on the platform at all, though removed out of actual danger, greatly impedes the conducting of business.

12. The span to cover three lines and two platforms would be 66 feet, which is larger than it appears desirable to risk.

13. If there are to be more than two lines of rails, there must, under the circumstances, be four lines, and I enclose a sketch of what appears to me the most practicable way of securing the increased accommodation, the platform at the end and a porte cochère.

14. I have already explained that by adding to the present design without altering it, a larger number of rails could be enclosed under cover, but as there would be some difficulty in making convenient access from platform to platform, owing to the North Wing of building being in the way; I should prefer dispensing with the North Wing altogether, if there are to be two platforms.

15. We cannot build across so wide a span as that now to be enclosed for rails and platforms, besides having a North Wing, without great expense. I propose therefore, to alter the sea front altogether, and let the platform at the end and the porte cochère be covered by a mere extension of the roof covering the rails.

16. The elevation and plan would then be as shown in the sketch.

17. It would be very easy merely to extend the original design on the sea front, and build a porte cochère as on the South side, but this would add so materially to the expense as to be unadvisable.

18. Instead of cast iron Columns and Girders which are not easily obtained and are very expensive, I propose the brick columns and arches shown in the sketch.

19. Cast iron would of course be more elegant and better adapted to the purpose.

20. The building now proposed will have less office accommodation than the original design, but I do not think it will be found too small.

21. It is not at all necessary to have any rooms on the North side of the line,

and I do not think that Major Pears' arrangement for the Booking Office and Waiting Rooms would answer.

22. The Booking Office ought to be central.

23. The coolest room in an Indian house is, I think, generally that which is surrounded on all sides by other rooms, and has no direct communication with the external air, and I believe that the room I appropriated as the Ladies' Waiting room will be cool.

24. After hearing what is the decision regarding the partitioning off of the rooms noticed under the 4th head, I will submit another arrangement of rooms consistent with that decision. I would only now observe that the water-closets, as placed in the tracing forwarded to me, would be too prominent objects in the rooms, and not very sightly.

25. As regards ventilation, this will be better effected by having small swing windows near the top of the rooms, than by increasing the size of the doors and windows.

26. I beg to suggest, that to prevent delay, Government would not perhaps object to sanction the plans and estimate of the Station with such reservations as they may think proper to adopt, without waiting for the detailed drawings of alterations which must necessarily occupy some time.

27. As no alteration has been proposed in the main block of the Station buildings, there is, I suppose, no reason why that should not be begun, as suggested in your letter.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

(True Copy.)

(Signed) E. SMALLEY,

Agent.

OFFICES SUPPOSED TO BE REQUIRED.

UP-STAIRS.

A.	Agent's Office		2	Rooms.
B.	Traffic Manager's Office		2	"
C.	Permanent Way Engineer's Office		2	"
D.	Accountants'	do.	2	"
E.	Audit	do.	2	"
F.	Goods	do.	1	"
G.	Record	do.	1	"
Z.	Fire Proof Closet,			
			12	"

DOWN-STAIRS.

J.	Station Master's Office		1	"
K.	Booking	do.	1	"
L.	Parcels	do.	1	"
M.	Telegraph	do.	1	"
N.	Porter's	do.	1	"
O.	Lamp	do.	1	"
P.	Ladies' Waiting-room		1	"
Q.	Gentlemen's	do.	1	"
R.	Native	do.	1	"
S.	Do.	do.	1	"
T.	Lost Luggage room		1	"
U.	Room for Inward Passengers		1	"
			12	"
			24	"

7th June, 1854.

(Signed) E. SMALLEY,

Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 129.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 181, of the 7th instant, forwarding a copy of correspondence with your Chief Engineer regarding the Madras Station building, and with reference to the 4th para. thereof, I beg to state that I shall be most happy to see you at my office at any time most convenient to yourself, to talk over this matter. I shall feel obliged by your returning the original plans* and estimate, as I agree with Mr. Bruce that they may be submitted as they are for sanction with explanation of the modification proposed.

* Received.

I have, &c.
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
10*th June,* 1854.

On letters (Nos. 158 *and* 181*) from the Agent of the Madras Railway Company, dated respectively the 22d May and 7th June,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits and recommends for sanction plans and estimates of the Madras Terminal Station.

The original estimate amounted to Rupees 3,44,649, or nearly 3½ lacs of Rupees.

This estimate provided a range of buildings of two floors for the usual offices, required for a Station of this description, as shown in the list forwarded by the Agent. It provides also Goods warehouse, or godown, Engine stables and workshops, levelling, ballasting and laying the rails, on and about the Station ground.

The following abstract Statement shows the estimated amount under each head.

Station House and Passenger's Shed	99,907	10	2
Goods Warehouse	55,836	0	0
Engine Stables, Carriage and Smith Shops, and Offices, and Godowns	71,229	15	11
Water Tank and Well	1,834	0	8
Drains	13,427	8	0
Fence Wall	13,832	4	0
Dwarf Wall	4,777	6	0
Cast Iron and Lead Pipes	2,600	0	0
Miscellaneous	52,293	0	0
Contingencies	28,911	3	3
Total Company's Rupees	3,44,649	0	0

I have recommended to the Agent some slight modifications to these plans. My views were explained to that gentleman in a letter, copy of which accompanies this report.

I should have wished a handsome sea front, and I think it would be better also to have at once four lines of rails, instead of limiting the accommodation to two, and constructing buildings, as shown in the ground plan, in such a way as would render necessary their demolition before additional lines of rails could be added. Mr. Bruce remarks very justly that the business of a Railway requires that many of the Offices should stand close to the line,—that the principal range with platform should therefore run down parallel to the rails, and must face South. To add an East face would add considerably, and as far as we can at present see, unnecessarily to the expense of the building.

There has been no time to prepare a revised plan; but the Agent has forwarded a

sketch from the Chief Engineer, dated 2d June, showing the mode in which he proposes to construct the covering for four lines of rails instead of two.

The exact character of the roof may be determined hereafter; but I think the proposed plan generally will answer well, and it will be easy hereafter, if more accommodation be required, to construct along the sea line, facing East, a handsome front. It could easily be done, and the ends of the sheds screened from view.

The arrangement, as at present proposed, will at least have the advantage of throwing the Terminus shed and platform, with the adjacent offices, open to the sea breeze.

Mr. Bruce has estimated for six Goods godowns, but proposes at first to construct three only, until the nature and amount of traffic is ascertained.

I shall request that a revised plan of the building be submitted as soon as possible, and would recommend in the mean time that permission be granted to the Agent to proceed with the principal range of offices (the shed of which will not be affected by the proposed modifications), with the three Goods warehouses, and with the general expenses connected with the levelling of the station and laying of the rails. I would also recommend that the estimates for the Engine stables and workshops be sanctioned; but that they be placed, as recommended* by the Railway Directors, at Perambore instead of Madras. I find upon enquiry that the immediate proximity of the sea to workshops, tools, stores, &c. is a source of great trouble and expense; and I quite agree with the Directors in thinking that Perambore would be on this account, as well as by reason of its being the point of junction of the Egmore branch, a preferable site for these buildings.* With regard to Mr. Bruce's objection, para. 8 of his letter of the 9th May, I would observe that the office of superintendence of Locomotives and Workshops constitutes (usually) a distinct department; and that it cannot be of any consequence whether its Head be at Perambore or Royapooram, so long as his shops and stores are where he is. The works which I have above recommended that the Agent should be authorized to proceed with are estimated at about Rupees 287,912-2-0, viz.,

* Extract Minute of Consultation, No. 124, dated 7th June, 1854.

Principal Building	90,000	0	0
Goods Warehouses (3)	27,918	0	0
Engine Stables, &c.	71,229	15	11
Water Tank and Well	1,834	0	1
Drains	13,427	8	0
Fence Wall	13,832	4	0
Dwarf do.	4,777	6	0
Cast Iron and Lead Pipes	2,600	0	0
Miscellaneous	52,293	0	0
With a portion of Contingencies	10,000	0	0
Total Rupees	287,912	2	0

I shall submit revised plans with estimates hereafter.

The prices given in these estimates are all liberal; and it may be reasonably expected that as the Railway itself comes into operation,—the permanent way is even now being laid—greater facility will be experienced in the conveyance of materials, &c.

As an example I would instance the item of ballast for the several lines of rails within the Station: this is estimated at 12 As. the yard, the same in the estimate for District No. 1 having been estimated at 8 As. The sand lying about the Station will furnish some portion of the ballast, and the rails laid a few miles out of Madras will cheapen the transport of the gravel and laterite for the remainder; and by this means the expenditure in this one item, given in the estimate at Rs. 33,521 will be consider-

ably reduced. I would recommend that the Agent be authorized to proceed with the above works, and instructed to forward revised plans and estimates for the whole.

MADRAS, 22d June, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 149.

Extract from the Minutes of Consultation, dated 4th July, 1854.

Read the following observations of the Consulting Engineer on letters from the Agent of the Railway Company.

(Here enter 22d June, 1854.)

The Right Honorable the Governor in Council concurs in Major Pears' view of the building of the Madras Terminal Station, and in the proposed modifications, and sanctions the estimate generally, on the understanding that more complete plans will be submitted to Government at an early date.

(True Extract.)
(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TANOOR,
27th January, 1854.

No. 188/1844.

FROM H. V. CONOLLY, ESQUIRE,
Collector of Malabar.

To MAJOR PEARS,
Consulting Engineer for Railways, Coimbatore.

SIR,

1. In my letter of the 7th November last, I recommended Ponany as the natural Terminus for the Railway. But before any thing is finally determined on, I think it not amiss to attract your attention to the advantages which (in some respects) Calicut has over Ponany from being the capital of the province, and the long established seat of trade.

2. Ponany, as you are aware from your own visit, is an inferior place in every thing but position; and even this position has its disadvantages.

From being exposed to the full brunt of the wind which blows with great violence through the Palghaut gap in December, January and February, it is not so well suited for shipping as any of the ports to the northward, and especially Calicut, which are screened by the Koondah mountains from the severity of the wind. This might be a point of considerable moment.

3. A road through the heart of Malabar from Palghaut to Calicut would open a finer country than that from Palghaut to Ponany.

One very difficult bridge (at Tirtallah) would be avoided.

4. The line would be longer, but the engineering difficulties, it strikes me, less. Of this however you will be a better judge than myself.

I have the honor, &c.,

TANOOR, 27th January, 1854.

(Signed) H. V. CONOLLY,
Collector.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 71.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 98, dated 29th Ultimo, forwarding plans and estimates of Station buildings of two different classes; the one for such places as Perambore and Trivalore, the other for still less important points on the line at Corattoor, Avady, &c.

I have given these plans my best consideration, and it has appeared to me that they are open to the following objections. They are built, as it seems, with a view of the Clerks or Station masters living in them: I consider this should not be permitted. The Station master may be a European. In many cases he will certainly be a native of India. In the former case he would probably be a man with wife, family and native servants about him, and I think it would be found in practice very inconvenient that his dwelling house should be under the same roof with the Stations or indeed within the ordinary limits of the line of Railway. In the event of the Station master being a Native, it would be, as you are aware, as unnecessary as it would be inexpedient to offer him a residence in the Station building.

Moreover the question of providing the Station masters with quarters free of charge remains to be considered and determined. If decided in their favor, suitable quarters might be built for them near to but without the bounds of the Railway.

I think also that in the size of doors and windows these buildings are hardly suited to the climate of this part of India. The windows in the large bungalow are 3—6 by 6—6; the doors are 4—6 by 8.

In all such buildings and especially in halls, waiting and other public rooms, it is better to have large doors and no windows, giving free access to the greatest amount of fresh air.

I would propose to you, and request your opinion upon the proposition, that for the present we should consider four different classes of Stations, besides those at the two coast Termini.

The first class, being at or near European Stations or points of junction, whether of high roads or branch Railroads, where a considerable number of European travellers may be expected to demand accommodation.

The second class, less important Stations of the same description.

The third class large Native Towns, places where the travellers will be almost wholly Natives, and the goods agricultural produce to a considerable amount.

The fourth class the small Stations where the passengers will be few and those wholly Natives. The goods chiefly agricultural produce. Examples of these may be given as follows:—

Of the 1st Class......... Vellore, Salem.
Of the 2d Class... ..... Arcot, Vaniembady, Palghaut.
Of the 3d Class........... Bowany, Trivalore.
Of the 4th Class........... Avady, Conoor.

I consider this a question deserving careful consideration, and shall be much obliged by your and Mr. Bruce's further sentiments upon it.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
22d April, 1854.

(True Copy.)

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
9th May, 1854.

No. 137.

FROM E. SMALLEY, ESQUIRE,
Agent.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

28th April, 1854, No. 170. I have the honor to acknowledge the receipt of your letter of the 22d ultimo, regarding Station buildings, and to forward copy of a letter on the subject to the Chief Engineer of the Railway and of his reply.*

* 2d May.

2. After considering the matter carefully, I am of opinion that the Station masters should reside in the Station. In fixing their pay it will be proper to calculate the advantage of free quarters, if granted. The domestic offices, which in this country pass under the general name of godowns, should be built at some distance on one side or in the rear.

3. I concur in your opinion that there should be four classes of Stations besides those at the two Termini.

4. Mr. Bruce will of course, in building future Stations, provide well sized doors suited to this climate, and whenever practicable, place doors rather than windows so as to secure as free a circulation of air as possible.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the orders of Government.

MADRAS,
13*th May*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS, 28*th April*, 1854.

No. 170.

GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

SIR,

1. I have the honor to forward copy of a letter from the Consulting Engineer on the subject of Railway Station buildings, and request your opinion thereon.

22d April, 1854, No. 71.

2. With respect to the propriety of having four classes of buildings, I concur in opinion with Major Pears.

3. In regard to the propriety of the Station master residing in the Station, I am reluctantly obliged to differ entirely from the Consulting Engineer. I believe it to be of the utmost importance that the Station master should reside in the building, and that he could hardly be held responsible if he did not. He has to be responsible, first, for all the tickets, which are equivalent to money. Secondly, for his cash chest and the money taken during the day. Thirdly, for office furniture. Fourthly, for articles which may be left by passengers in his charge. Fifthly, if there is a siding at the Station, for the wagons and their contents. Sixthly, in case of accidents, or whatever may occur to passing trains during the night. Seventhly, for his signals being kept properly lighted during the night.

4. I rather suppose we shall employ Europeans or East Indians Station masters. But if hereafter a Native should be employed, he himself must remain at the Station building, whilst his family reside in the nearest village or place convenient. This may prove an obstacle to the employment of Natives in this particular post.

5. If deemed desirable a building might be constructed under one roof, with an open division in the middle, so as to separate the private apartments from the office. At places where trade or passenger traffic is now inconsiderable, but where there is a probability of increase, a building might be constructed with a gable end, admitting of any increase of accommodation which could be required.

6. I do not pretend myself to much practical knowledge of such matters, but my Chief Clerk, who is practically conversant with Railway details, assures me that he does not know a Station in England where the Station master does not reside. At the terminal Station there is, I believe, an Inspector in addition, with a suitable Establishment; so that there is always, day and night, one officer on the spot, ready to attend to any thing which may occur.

7. You will of course be good enough to notice Major Pears' remarks about doors and windows.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Madras Railway, Chief Engineer's Office,
Shervaroy Hills, 2d May, 1854.

From GEORGE B. BRUCE, Esquire,
Chief Engineer.

To E. SMALLEY, Esquire,
Agent.

Sir,

1. The classification of Stations suggested by Major Pears is both natural and judicious: as yet we only require to consider two of these.

2. I do not see how we can possibly conduct the traffic of the Railway, if the Station masters do not live on the spot, in fact in the Station; for besides the reasons named in your letter there is night traffic to be attended to: this in the first instance might be disregarded, but ultimately it cannot be.

3. It is the universal custom in England, and so far as I have seen, in India also.

4. I purposely made the windows small, because the Bungalows themselves are small. As in other cases, I found that larger windows looked too large. Some of these windows are in their places, and if Major Pears, on seeing them, continues to think them too small, it will be easy to guard against this error in future.

I have, &c.,
(Signed) G. B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 137, *dated 9th May,* 1854, *with Correspondence.*

Observations by the Consulting Engineer.

1. The Agent has forwarded plans of proposed Station buildings which have not

yet been submitted to Government, some alterations having been suggested. The question has arisen, and is now submitted for the decision of Government whether Station masters should reside in the Stations. That the Station master must reside at the Station there can be no doubt. It is even desirable that his residence should be within the limits of the Station premises; but I consider his residence under the same roof with the Station, as commonly understood, the Booking Office, Waiting Rooms, &c., very objectionable.

2. Mr. Bruce's experience of the practice in England differs from mine; though it is probable that that gentleman has had opportunities of observing the practice in more cases than I have. I do not remember any instance in which the Station master or any one else resided under the same roof with the Booking Office, &c.

3. Be this as it may, the question should be considered upon its own merits, and with reference to this country.

4. The Station, as generally understood, is properly an Office; it stands close to the line—so close that passengers step out and goods are delivered from the carriages, on to the platform connected with the building.

5. As a general rule the circumstance of a man living with his family in his office is not considered favorable to the steady and careful transaction of business. It is far better that when a man is at home he should be considered for the time relieved from responsibility to a certain extent, and that when he is in his office he should be wholly there, and at his work.

6. The Station masters on the line will be Native, East Indian, or European.

7. The majority of them must I think be Natives; as better men of business than any of the other classes, whose services could be obtained at any thing approaching to the same cost.

8. For those to live in the Office is out of the question.

9. In cases where the Station masters may be East Indians, it may be expected that they would be married and men with families. The domestic habits of men of this class in India, the number and character of servants, and the immediate proximity of the Railway to the building appear to me to render that a most objectionable arrangement, which would place these families in the Station buildings.

10. The duties which the Agent enumerates are not such as either require or are at all the better performed by a man sleeping with his wife and children in the Station house. They must be provided for by the introduction of some thing like military order and discipline; by the provision of a sufficient number of Agents, and by their regular relief.

11. I would therefore recommend, as a general rule, that no person be permitted to reside in the Station building; and that when it has been decided that this or that class of servants are to be provided with free quarters, a system open to many objections, and one that remains to be considered, suitable sites be selected, according to circumstances in each particular case.

MADRAS,
13*th May*, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,

Fort Saint George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 121.

Extract from the Minutes of Consultation, dated 30*th May*, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 13th May, 1854, No. 113.)

1. The Right Honorable the Governor in Council concurs with the Consulting Engineer in his views on the question which has arisen between him and the Railway Officers, whether Station masters should reside in the Station houses, and is of opinion with that Officer that as a general rule, no person should be permitted to live in the buildings. The question will however be referred for the decision of the Home authorities by the next Mail.

2. In the meantime His Lordship in Council desires Major Pears will call for the plans of the proposed Station houses and lay them before Government, with alterations according to his views, and that materials may be prepared, and such part of the work commenced as will not be affected by the question at issue.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

MADRAS RAILWAY AGENCY OFFICE,
5th August, 1854.

No. 254.

FROM E. SMALLEY, ESQUIRE,
Agent.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

Dated 24th and 20th July.

1. With reference to your letter of the 13th Ultimo, I have the honor to forward two letters from the Chief Engineer respecting District Stations.

2. In his first letter Mr. Bruce states that four classes of Stations are not at present required, and recommends the completion of the Stations which have been begun.

3. In the second letter Mr. Bruce furnishes information regarding the expenditure upon Stations.

4. If I understand rightly the whole work is now standing still, as stated in the 3d para. of Mr. Bruce's letter of the 24th July. It appears to me that it would have been better if the seven Stations had been delayed for some time: so much work has been executed, and so much money expended that it becomes a serious question whether it would be expedient now to make any alteration, taking care that no addition of any sort be made.

5. As there will probably be but little goods traffic at the Perambore Station, I should be disposed to confine it to it's present dimensions. I should hardly consider it a first class Station.

6. As a general rule, and until we ascertain the probable amount of traffic by experience, I think that Stations should be constructed on a moderate scale, but so that they will easily admit of enlargement.

7. It will be well, I think, to build only such Stations as are found to be absolutely necessary, without calculating that if not required, they may be used by Overseers as dwellings.

I have the honor to be, Sir,

Your most obedient Servant,

(Signed) E. SMALLEY,

Agent.

Submitted (with observations) for the orders of Government.

CAMP, TIRMANEY, }
23d August, 1853. }

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,

Fort St. George.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 24th July, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,

Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,

Agent.

SIR,

I duly received the order of Government regarding the minor Stations, and the request that plans be made for four classes of Stations.

2. At present we only require two classes of Stations, such as those for Tripassore and Avady, and as the description of building must in many cases vary with the position relatively to public roads, the weight of embankment and other circumstances, I would suggest that it would be of little use to make plans in anticipation of our future wants. Besides which it is scarcely desirable to make all the Stations on one plan, as it will be more agreeable to see a variety.

3. Most, if not all our Stations on the first fifty miles have been commenced, and some of them are considerably advanced, though the work has now been stopped.

4. Regarding the order of Government that plans be prepared for the minor Stations, which will answer whether the Station master resides in the house or not, I beg to remark that the buildings have been designed upon so small a scale, that under any circumstances they could scarcely be made less; and they meet at least in some measure this order of Government.

5. I beg therefore to propose for the consideration of the Consulting Engineer and Government, that the buildings already begun be completed, because if in any case found too small, it will be easy to add to them, and if on the other hand any should be found unnecessary as Stations, they will be valuable as dwellings for Overseers after the opening of the line.

6. I should regret losing any more of this season, for if the buildings are to be completed, they should be covered in before the monsoon.

I have, &c.,

(Signed) GEORGE B. BRUCE,

Chief Engineer.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
Shervaroy Hills, 29th July, 1854.

FROM GEORGE B. BRUCE, ESQUIRE,
Chief Engineer.

To EDWARD SMALLEY, ESQUIRE,
Agent.

SIR,

I have, in my letter of the 24th instant, anticipated that received to-day from Major Pears, referring to the Stations, and I shall not, in the meantime, say more on the subject, waiting his reply to my letter.

Names of Stations.	*When commenced.*	
Perambore	March—Finished all but the roof.	
Conoor	do.	do.
Avady	do.	Rs. 500
Tinnanoor	do.	„ 250
Tripassore	May	„ 345
Buddoor	June	„ 250
Tyoor	May	„ 436

2. The sums entered in the third column show the money which has been expended upon each Station, exclusive of brick making.

3. The doors and windows have been finished for some months.

4. Nothing has been done at Perambore or Conoor, for some time.

5. The Stations on District 2 were commenced in May and June.

6. I received the orders of Government on the 23d of June: very little has been done since.

I have, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copies.)
(Signed) E. SMALLEY,
Agent.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 185.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

In an order of Government, dated the 30th May, you were requested to furnish plans of the proposed Station houses with alterations according to the views expressed in my letter to your address of the 22d April, 1854, and it was further directed that materials might be prepared, and such part of the work commenced as would not be affected by the question at issue, viz., whether Station masters should reside in the Station houses.

I regret to observe that while the order of Government remains unanswered, the work of constructing the Station buildings, according to the original plan forwarded by you with your letter of the 9th May, No. 137, has been going on.

I have the honor to request that the work may be immediately stopped, (and I have requested the Assistant Engineer in charge of District 1 to act in anticipation of instruc-

tions from the Chief Engineer to this effect) until Government have had an opportunity of considering the plans, which will be submitted in accordance with the order above referred to.

The Government has concurred in the views expressed in my letter of the 22d April 1854. In that letter I proposed four classes of Stations. With the exception of the Perambore Station, which has been for some time far advanced, and may be considered as a first class Station, and the Trivalore Station, which may be considered as a third class Station, the whole of the Stations in Districts 1 and 2 may be considered as fourth class Stations, I should think.

There was one point, which it did not occur to me to notice in my last letter on this subject, but which I consider to be one of importance, especially in this country, viz., that the building should be so arranged that no person should pass on to the platform or within the limits of the Railway in order to reach the Booking Office, until he has received his notice, and has permission to do so.

I consider also that in the fourth class, apart from the question of the Station master residing in the building, there need be no waiting room. Shelter from the weather is all we require in that case, and an open shed with one office attached, and a wall with door, and a barred window or two separating it from the platform would be the best arrangement: the same arrangement would answer in the third class, the Booking Office being a little larger, so that the few Europeans arriving could be accommodated in it; and other conveniences for this class of passengers might be provided in the Stations of this class.

I beg you will favour me with the revised plan for Stations of the third and fourth class at your earliest convenience, and in forwarding them to Government, I shall take the opportunity of requesting further orders regarding the buildings in District 1, some of which appear to be far advanced towards completion.

With this view, I request to be informed on what date the several stations in that District were commenced, how far they are severally advanced, and when they attained that state of advancement.

I have the honor to be, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP CACKOOLOOR,
13th July, 1854.

(True Copy.)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

On a letter (*No.* 254) *from the Agent of the Madras Railway Company, dated 5th August,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

1. The order of Government in the Financial (Railway) Department, No. 121, of the 30th May last, was communicated to the Agent on the 2d of June. In passing up the line of Railway last month, I observed that the Railway officers were proceeding with the construction of the bungalows upon the original plan framed with a view to the Station masters residing in these buildings.

2. I communicated to the Agent in a letter dated the 13th July, 1854, No. 158, that I had requested the Engineer in charge to stop all works upon these buildings until further orders. It will be observed that Mr. Bruce's letter in acknowledgment of the above orders* of Government was dated the 24th July. From that gentleman's letter of the 29th July, written on receipt of my instructions to stop all further work in these buildings, it appears that money has been spent upon seven different Station buildings. Mr. Bruce wishes to proceed with these buildings.

* 30th May 1854, No. 121.

3. The orders of Government, dated the 30th May, ought to have been communicated to the Chief Engineer of the Railway much earlier than they actually were. Received however by Mr. Bruce on the 24th June, the work on the buildings should have been suspended before the 13th July, when found by me still in progress.

4. The plans forwarded originally by the Agent, in which alterations were suggested by me, are herewith* submitted, as also my letter to the Agent of the 13th Ultimo.

* Will be forwarded from Bangalore.

5. I have made upon these plans, which might be made to answer for first and third class Stations, certain notes and alterations in red ink, showing the method in which, I should propose to adapt these to the purpose, assuming the following principles.

1st. That the Station Clerks do not reside in the buildings.

2d. That the passengers should be prevented from going on to the platform until specially permitted to do so.

6. It appears to me that the exclusion of strangers from the platform should be made complete by the provision of railings across the verandah, connected with a wall or other fence beyond.

7. Mr. Bruce, in his letter of the 24th July, suggests that it would be of little use to make plans in anticipation of our future work.

8. The propriety of having four classes of Stations, as suggested in my letter to the Agent, dated 22d April, 1854, and concurred in by that gentleman, was recognized by Government.

9. I am so far from agreeing with Mr. Bruce on this subject, that I think it very desirable to anticipate thus far; to have all our plans ready and well considered; and I think the Agent cannot do better than prepare as soon as possible, in consultation with the Chief Engineer, plans adapted to the probable necessities of the four descriptions of Stations referred to.

10. As to the description of building varying with the height of embankment, &c., this objection applies to the estimate; but not to the ground plan or arrangement of the building, which is the most important point to be considered.

11. I do not think that these buildings should have, after the order of Government of the 30th May, been proceeded with; but I think that having gone so far they had better be carried on; the Agent being requested to keep in view the alterations which I have suggested, or other alterations having for their end the observance of the principles above mentioned.

Extract from Minutes of Consultation, No. 121, 30th May, 1854.

12. Before any other Stations are commenced, it would be desirable to have revised plans for the four classes prepared, which might be done as soon as the opinion of the Board of Directors shall have been received.

13. In the statement showing the position of Stations submitted and sanctioned by Government, the village of Corattoor nearly half way between Perambore and Avady was named. By some mistake the Chief Engineer has placed this at Conoor within two and a half miles of Perambore. I considered the original intention should be adhered to, and a third class Station constructed at or near Corattoor; in which case the Agent suggests that that in progress near Conoor might be completed and brought into use for an Inspector's quarters. A Station at Corattoor would be useful in connection with the Red Hills, which would probably become a place of greater resort among the European Society of Madras in consequence.

CAMP, TIRMANEY,
23d August, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 201.

Extract from the Minutes of Consultation, dated 16th September, 1854.

Read the following observations of the Consulting Engineer on a letter from the Agent of the Railway Company.

(Here enter 23d August, 1854.)

Para 1. The Right Honorable the Governor in Council quite agrees with the Consulting Engineer in his remarks and suggestions respecting the Station buildings, and the construction of a third class Station at or near Corattoor, and desires that the necessary instructions be communicated to the Agent of the Railway Company.

2. His Lordship in Council considers the conduct of the Railway Authorities in proceeding with the Station buildings to be so exceedingly unsatisfactory, and so directly in opposition to the instructions of Government, that he resolves to bring it specially to the notice of the Honorable Court.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

To LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 212.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

No. 201, dated 16th September, 1854.

In forwarding for your information the accompanying copy of an order of Government as per margin, I have the honor to request that the several Station buildings mentioned in Mr. Bruce's letter of 19th July, as having been commenced, may be proceeded with, and that no other similar buildings be commenced, until a revised plan for the fourth class of Station shall have been sanctioned by Government. It will be as well to defer the preparation of these plans until the final decision of the Honorable Court be known upon the question referred to by Government in their order of the 30th May, 1854, No. 121.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP, PALMANAIR,
21st September, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 91.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

To THE COLLECTOR OF NORTH ARCOT.

SIR,

I regret to say that the Agent of the Madras Railway has not yet forwarded to me any further portion of the survey of the line of Railway; and I am not therefore

yet in a position to give the information regarding the Stations promised in my letter of the 6th May last.

It may save time, however, if I inform you that the line will run near Veril, by Kurredycoopum and Ammoor, to Trivallum.

The Railway Company proposes, as a general rule, establishing Stations of various degrees of importance at every five or six miles. The exact position of these Stations will depend primarily upon the direction of the existing high ways, and the relative importance of the several towns and villages near which the line passes; but it will also depend in a measure upon the circumstances connected with the Railway itself; steep gradients—high banks—deep cuttings not being favorable for the establishment of Stations. Though surveys showing the exact course of the line beyond Menil have not yet been forwarded by the Railway authorities, it may suffice to state that its course will be by Trivallum, and along the valley of the Paluar, crossing that river, at some convenient spot yet to be determined, to Amborc and Vaniembady.

I should feel obliged (with reference to an order of Government as per margin) if you will favor me with your opinion as to the points at or near which you think Stations ought to be established; and I shall ascertain and let you know as soon as possible whether there are any objections to their being so placed, arising from the circumstances of the Railway itself at those points.

No. 140, dated 23d Mar. 1854, Para 2.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
29th June, 1854.

NORTH ARCOT, COLLECTOR'S CIRCUIT CUTCHERY,
Palmanair, 5th July, 1854.

No. 190.

FROM J. D. BOURDILLON, ESQUIRE,
Collector of North Arcot.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways, Madras.

SIR,

1. I have the honor to acknowledge your letter of the 29th June, inviting suggestions, as to the sites proper for Stations along the Madras Railway through this District. In the absence of exact information as to the line to be taken by the Rail, it is impossible to fix on the precise places for the Stations; but I will readily give you such general ideas as occur to me.

2. The Railway Company, you observe, propose to have Stations at every five or six miles. It is to be supposed, however, that they do not intend to have them as frequent in the more wild and thinly peopled, as in the more populous parts of the line.

3. The last Station yet actually fixed upon appears to be Vedul or Veril; from which point the line is to go, as you inform me, by Kurredycoopum and Ammoor to Trivallum. The distance is about twenty-two miles, and under the foregoing rule there should be two Stations midway. One of those should certainly be at or near the point where the Rail crosses the road between Wallajapet and Sholinghur, and judging from the line indicated by you, that point will be about Colattairy. This will be the Station for Wallajapet, and for Ranipet and Arcot as regards traffic going Eastward. It will probably also be the Station for Sholinghur, at least till a road shall be made from Vedul.

4. Colattairy will be about fifteen miles from Vedul, and a small Station will be proper at some intermediate point. I am not prepared to say precisely where it should be; perhaps at Bannaveram, about midway, if the Rail goes by that place.

5. There will of course be a Station at Trivallum. It will be the Station for Arcot and Ranipet in traffic to the westward; and perhaps for Chittoor in that to the eastward.

6. The next Station should be on the road from Vellore to Chittoor. This will be between eight and nine miles from Trivallum, and it will hardly be thought necessary to have a Station in the interval. The exact point on the road must depend on the line taken by the Rail; but there can hardly be much difficulty in determining it, when that is known. This will be the Station for Vellore, and for the westerly traffic, at least, of Chittoor and the North.

7. From this point the line will run along the north bank of the Palaur River, and pass between Pullicondah and Gorriattum, at perhaps about two miles from the former, and four from the latter. A road will shortly be constructed, I hope, to connect those two places, and at the spot where the line crosses that road there should be a Station. That Station will be about fifteen miles from the Vellore Station, and there might be a small one half way opposite Verinjeepoorum, but I cannot say exactly at what village.

8. From the Pullicondah Station to Amboor will be about 17 miles; and at this latter thriving place of business there will no doubt be a Station, and a busy one. As to the midway Station I know too little of the line to be followed, to be able to give an opinion. If, however, as seems likely, the Rail keeps the left bank of the Palaur for the greater part of the distance, I think there will be no difficulty in finding a suitable site.

9. After Amboor, I apprehend the next Station will be at the large and active town of Vaniembady, ten miles distant, and in the Salem Collectorate.

I have the honor to be, Sir,
Your most obedient Servant,
(Signed) J. D. BOURDILLON,
Collector.

NORTH ARCOT,
Collectors Circuit Cutchery,
Palmanair, 5th July, 1854.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 99.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE COLLECTOR OF NORTH ARCOT.

SIR,

I have the honor to forward for your information an original letter* (with enclosures) from the Agent to the Railway Company, to whom a copy of your letter of the 5th July, 1854, had been forwarded.

* To be returned.

It appears to me that Mr. Bruce makes a mistake in speaking of a road being made from Sholinghur to Cauverypauk. It may be, but I apprehend he refers to that from the former place to Wallajahnuggur. It appears to me that Bannaveram (the same, I presume, which in the Atlas is Rannaveram) is the proper point for a Station, which should serve for Sholinghur, and the produce coming through that Talook destined for Madras, as well as for the country about Cauverypauk; while another Station at or near Ammoor,

with which the road now making would communicate either wholly or in a great measure would be the most convenient point for a Station to serve Wallajahnuggur and Arcot. The proposed Station at Bannaveram would perhaps not, as far as the town of Sholinghur is connected, supersede that near Veril; but for any distant traffic coming through the Sholinghur talook by Poincy and Quodekel it would be much more convenient; and if a good road were made, I should think much of the Damulcheroo traffic would strike the Railway at this point. I have received a trace of the first portion of this District, which must be submitted to Government, but I will endeavour to obtain one for your information and guidance as soon as possible.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP BAULAPILLY,
21st July, 1854.

NORTH ARCOT, COLLECTOR'S CUTCHERRY,
Chittoor, 29th July, 1854.

No. 207.

FROM J. D. BOURDILLON, ESQUIRE,
Collector of North Arcot.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways, Madras.

SIR,

1. I have the honor to acknowledge your letter of the 21st Instant, and to return the original enclosures received with it. You are quite right in believing that there is no road under construction between Sholinghur and Cauverypauk: Mr. Bruce probably referred, as you surmise, to that in progress from Sholinghur to Wallajapett.

2. Bannaveram, (erroneously Rannavaram in the engraved Survey Map,) is the place proposed in my letter of the 5th Instant: a Station there will be useful to the immediate locality, and to Cauverypauk. But to connect it with the Damulcheroo Pass would require a new road for many miles; and considering that the pass will be already connected with the Railway by a very good road viâ Chittoor and Trivallum, I should not be prepared, in the pressing want of roads in all parts of the District, to advocate the formation of a road on that line at present.

3. Ammoor is erroneously laid down in the engraved map as on the road from Wallajapett to Sholinghur; while it is in reality a mile and a half from it. Colattairy, the place mentioned in my former letter, is on that road; or rather, to speak more precisely, the road runs along the Colattairy Tank bund.

I have, &c.,

(Signed) J. D. BOURDILLON,
Collector.

NORTH ARCOT,
Collector's Cutchery,
Chittoor, 29th July, 1854.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways, Madras.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 174.

FROM MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to forward copy of a letter from the Collector of North Arcot on

the subject of Stations on District No. 3, and to observe that that gentleman's views appear in fact to coincide with those of your Chief Engineer.

The Stations, however, should be, I think, at or as near as possible to Bannaveram, and at the most convenient point for the town of Wallajahnuggur, to serve both ways. The new road alluded to between that town and Sholinghur is not of so much importance as the having a Station at the nearest point to the Town; a separate road being made to it if necessary, or a branch from the road lately made, if that would answer the purpose.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP, TADPUTTREE,
5th August, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 150.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE COLLECTOR OF NORTH ARCOT.

SIR,

With reference to your letter of the 29th of July, I have the honor to inform you, that I have instructed the Agent of the Madras Railway Company to arrange for the establishment of Stations at Bannaveram and Ammoor. The latter I consider the most convenient spot for Arcot and Wallajahnuggur: though lying upon the old road from the latter place to Sholinghur, it is, as you observe, not on the present new road. It will be necessary therefore to prepare the necessary communications between the Stations in those two towns. In regard to Wallajahnuggur, I imagine a portion of the new Sholinghur road may serve; a branch from thence being carried to Ammoor. For Ranipett and Arcot, I presume, a new road must be made. The country is, I believe, exceedingly favorable.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
4th November, 1854.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 250.

FROM LIEUT. COL. T. T. PEARS, C. B.,
Consulting Engineer for Railways.

TO THE AGENT OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to request, with reference to my letter, No. 174, of the 5th August, that the Stations on District 3, may be placed at Bannaveram, and at Ammoor. I agree with you in thinking there might with advantage be a Station at the Poiney, until the bridge is built.

Indeed I am inclined to think it would be at all times desirable to have a fourth class Station on the left as well as a large Station on the right bank; since when the river is full, unless they use the Railway bridge, the inhabitants on this side cannot cross to the Station on the other, though purposing to travel westward.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
4th November, 1854.

MADRAS RAILWAY AGENCY OFFICE,
19th December, 1853.

No. 232.

To MAJOR T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to your letter, No. 137, of the 29th Ultimo, respecting a portion of the expense of constructing a terraced road from the Custom House to the Railway Terminus, being borne by the Railway Company, I have the honor to state that I have referred the question for the determination of the Directors in England, as you will perceive from the accompanying extract of my letter wherein I have recommended one half of the estimated cost or Rupees 12,500. The Chief Resident Engineer in the enclosed copy of his letter is of opinion that one-third of the cost would be sufficient to be defrayed by the Company, which opinion will be communicated by me to the Directors by the next Mail.

9th December 1853, No. 26, Para. 7.

13th December, 1853.

I have, &c.,
(Signed) E. SMALLEY,
Agent.

Submitted (with observations) for the information of Government.

MADRAS, COIMBATORE,
29th December, 1853.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

MADRAS RAILWAY,
Bangalore, 13*th December,* 1853.

To E. SMALLEY, ESQUIRE,
Agent.

SIR,

I beg to acknowledge the receipt of a copy of the correspondence regarding the new road proposed near Lord Clive's Battery.

I should not have felt justified in proposing that this Company should undertake the formation of such a road, as our interests will only be slightly affected by it.

It will however be a decided advantage to the trade of Madras, and it is perhaps not unreasonable that the Railway Company should bear a portion of the expense, forming as the road will do, an improved approach to the station. I would therefore suggest that the Railway Company pay one-third, and Government two-thirds of the entire cost.

It appears to me probable that the cost would be materially diminished, if the work was delayed, until the stone could be brought directly to the spot by Railway.

I am, &c.,
(Signed) GEORGE B. BRUCE,
Chief Engineer.

(True Copy.)
(Signed) E. SMALLEY,
Agent.

On a letter from the Agent of the Madras Railway Company, No. 232, dated the 19th December, 1853.

OBSERVATIONS BY THE CONSULTING ENGINEER.

There is no rule by which we may calculate in such cases as this what proportion

of the expense of the contemplated work should be borne by each party. It will be observed, however, that to the Railway Company the work is only calculated to be useful as facilitating the conveyance of their supplies, stores, &c. from the Beach, (and these might perhaps be more conveniently landed near their own station); and in promoting an increase of traffic, from the increased facility of access to their station.

2. To the public, on the other hand, who, whether the road is made or not, must provide means of transport for themselves and goods to the station, the construction of this road will be of the greatest advantage. I think therefore that the proposal made by the Chief Resident Engineer, that the Company should pay "one-third" is liberal and would recommend that it be adopted.

Mr. Smalley states a reference has been made upon this point to the Directors in England. I cannot perceive the necessity of this; the Agent himself being charged with the direction of the business connected with the expenditure in India under the supervision and control of the Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

CAMP COIMBATORE,
29th December, 1853.

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 11.

Extract from the Minutes of Consultation, dated 13*th January*, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 29th December, 1853.)

The Government concur in the view taken by the Consulting Engineer, for the reasons he assigns, and resolves according that the Railway Company shall bear one-third of the extension of the Beach from the Custom House to the new Terminus.

(True Extract.)

(Signed) H. C. MONTGOMERY,
Chief Secretary.

TO MAJOR T. T. PEARS, C. B.,
Consulting Engineer for Railways.

ENGINEER DEPARTMENT.

No. 6729.

FROM THE MILITARY BOARD,

TO MAJOR PEARS, C. B.,
Consulting Engineer, Railway.

SIR,

Referring to your letter, No. 53, of date 6th July 1853, I am desired by the Military Board to acquaint you that the Superintending Engineer has submitted an estimate for Rs. (113,727-12) one hundred and thirteen thousand seven hundred and twenty-seven, and Annas twelve, as the cost of the works necessary for extending the Beach and which you estimated would cost Rs. (22,000) twenty-two thousand, and the Chief Engineer estimated at (25,000) twenty-five thousand Rupees.

As it will be requisite to submit the estimate to Government, and it will save time in references, the Board will be glad to have your views for submission to Government, along with the report of the Chief Engineer.

The Board desire me to transmit to you the following papers

From Marine Board, 24th December, 1852,	Board's	No.	21614
Minutes of Consultation, 54 of 18th Jan. 1853,	,,	,,	22950
Master Attendant, 26th February 1853,	,,	,,	26157
Chief Engineer, 3d March 1853,	,,	,,	26416
To Government, 672 of 11th March 1853,			
Minutes of Consultation, 5th May 1853,	,,	,,	212
Minutes of Consultation, 428 2d May 1853,	,,	,,	213
Major Pears, C. B., 63 6th July 1853,	,,	,,	4819
Estimate for 2 Groynes	,,	,,	2080
Chief Engineer, 26th July 1853,	,,	,,	5786
To Government, 6th September 1853 169,			
Minutes of Consultation, 7th October 1853,	,,	,,	10210
Minutes of Consultation, 25th November 1853,	,,	,,	12777
Estimate for extending Beach,	,,	,,	14016
Adjutant of Engineers,	,,	,,	17219

and request that these may be returned.

You are aware that one of the Groynes opposite Messrs. Arbuthnot and Co.'s House is now being extended, under the sanction of Minutes of Consultation, No. 428, dated 2d May 1853, at an expense of Rupees (4,687-5-6) four thousand six hundred and eighty-seven, Annas five and Pice six, and that the Chief Engineer contemplates the extension of the other Groynes.

The outlay for these two Groynes is entirely distinct from the project for widening the Breach; but will be useful as giving experience for the other work; and should you see fit, the Board will be glad to have your opinion in connection with these two Groynes, as to the advantage of proceeding with both Groynes before commencing widening the Breach.

MILITARY BOARD OFFICE,
Fort St. George,
21*st February,* 1854.

I have &c.,
(Signed) A. H. HOPE,
Secretary.

On a letter, No. 190, *from the Agent of the Madras Railway Company, dated* 12*th June,* 1854.

OBSERVATIONS BY THE CONSULTING ENGINEER.

In an Extract from Minutes of Consultation in the Financial (Railway) Department, No. 105, dated 12th May, Government was pleased to approve of a broad road way being made from the Boatmen's gate of Black Town along the East face of the Railway station, and of the Railway Company bearing a portion of the expense. The Agent states in the accompanying letter that he concurs in the opinion expressed by the Chief Engineer of the Railway that the Company should bear one-half of the expense.

The Railway station will be raised several feet above the general level of the Esplanade. The road in question must be raised to the same level.

2. It appears to me therefore that the expense of raising the road to that level should be first borne by the Railway Company—that they should so far perform the work first—that the road being then made by Government upon the plateau thus formed—one-third of its cost should be paid by the Company.

3. The road should be, I think, not less than 60 feet broad.

MADRAS,
19*th June,* 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

To THE CHIEF SECRETARY TO GOVERNMENT,
Fort St. George.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 139.

Extract from the Minutes of Consultation, dated 27th June, 1854.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 19th June 1854.)

1. In Paras. 2 and 3 of his remarks on the Agent's letter of the 12th Instant, the Consulting Engineer suggests that the expense of raising the road from the boatmen's gate along the East face of the Terminus to the level of the Railway Station should be first borne by the Railway Company, and that they should so far perform the work; and that the road should be then made by Government upon the plateau thus formed and one-third of its cost paid by the Company. It is also suggested that the road should not be less than 60 feet broad.

2. The Right Honorable the Governor in Council, approving of these suggestions, authorizes their being adopted, and desires that the same be communicated to the Agent and Chief Engineer of the Railway Company.

3. Ordered that a copy of Major Pears' report and this resolution be furnished to the Military Board and the Chief Engineer with reference to Extract Minutes of Consultation, dated 12th May last, No. 105. The Military Board will in due course submit an estimate of that portion of the work which is to be undertaken by the Government.

(True Extract.)

(Signed) H. C. MONTGOMERY,

Chief Secretary.

To MAJOR T. T. PEARS, C. B.,

Consulting Engineer for Railways.

PUBLIC DEPARTMENT.

No. 950.

Extract from the Minutes of Consultation, dated 16*th September,* 1854.

Read the following letter from the Military Board.

(Here enter 7th September, 1854.)

Submits for sanction two estimates for forming a Road from the Boatmen's Gate along the East side of the Railway, and also for forming a Road along the Northern Wall of the above, amounting in the aggregate to Rupees 7,822-15-8, accompanied with explanation.

The Right Honorable the Governor in Council sanctions the estimate for forming the Road along the Eastern boundary of the Railway Terminus, amounting to Rupees (5,559-15-4) five thousand five hundred and fifty-nine, Annas fifteen and Pice four. One-third of that amount being defrayed by the Railway Company as suggested in Para. 2 of the Consulting Engineer's letter, dated 19th June last.

2. His Lordship in Council sanctions also the estimate amounting to Rupees (2263-0-4) two thousand two hundred and sixty-three and Pice four for forming a road along the Northern Wall of the Railway Terminus.

(True Extract.)

(Signed) H. C. MONTGOMERY.

Chief Secretary.

To LIEUT. COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

ENGINEER DEPARTMENT.

No. 3857.

FROM THE MILITARY BOARD.

To THE CONSULTING ENGINEER FOR RAILWAYS.

SIR,

In reference to your letter, No. 96, of 10th July, 1854, forwarding one from the Chief Engineer of the Railway, offering to remove the earth on the line of Road proposed to be constructed to the North of the Railway station, and again to your observations under date 19th June, 1854, relative to the roadway to the East of the station, viz., that the "expenses of raising the road to that level" (i. e. of the station) should be first borne by the Railway Company, and that they should so far perform the work; and that the road being then made by Government on the "Plateau thus formed, one-third of its cost" should be paid by the Company.

2. The Military Board accept the offer to remove the earth into the Railway station; and when the Superintendent, Government Roads, shall be informed by you that the whole length is levelled, he has the Board's instructions to proceed with making the Road.

3. In the same manner with the Road way on the East, or sea side, he has the Military Board's instructions to proceed with the construction of the road, so soon as he should be informed by you that the plateau is ready for its reception.

4. The one-third of cost of executing this work shall be computed on the completion of the work, when the Bill is submitted by the Superintendent, Government Roads.

5. The Military Board fully concur with you in opinion that until these roads are made, the existing Road across the Railway station cannot be stopped up; and they would therefore express a hope that the operation of raising the platform to the proper level be undertaken without further delay.

MILITARY BOARD OFFICE,
Fort Saint George,
14th October, 1854.

I have, &c.,
(Signed) A. H. HOPE,
Secretary.

ENGINEER DEPARTMENT.

No. 5150.

FROM THE MILITARY BOARD,

To THE CONSULTING ENGINEER FOR RAILWAYS.

SIR,

The Superintendent of Government Roads having reported to the Military Board, that you informed him the Railway authorities decline covering the sandy plateau recently raised by them to the East of the Railway terminus, with a clay bed for the granite road to be made from the Boatmen's gate to the North East angle of the plateau on which the station is to be built, I am directed to request your attention, and, through you, that of the Railway Company Officers, to the quotation in the margin, from which it is evident the engagement entered into provided that the Railway Company should form a plateau for the reception of the Metalling of the road in question.

2. That the plateau reported on does not come up to the intention of that engagement is manifest; as, having been raised with sand only, it is not in a condition to carry a sur-

Extract from the Minutes of Consultation, dated 27th June 1854, No. 139.

1. In Paras. 2 and 3 of his remarks on the Agent's letter of the 12th Instant, the Consulting Engineer suggests that the expenses of raising the road from the Boatmen's Gate along the East face of the Terminus to the level of the Railway Station should be first borne by the Railway Company, and that they should so far perform the work, and that the road should be then made by Government upon the plateau thus formed, and one-third of its cost paid by the Company.

It is also suggested that the road should not be less than 80 feet broad.

2. The Right Honorable the Governor in Council ap-

proving of these suggestions, authorises their being adopted and desires that the same be communicated to the Agent and Chief Engineer of the Railway Company.

Extract of a letter from the Military Board, dated 14th October, 1854, No. 3857.

3. In the same manner with the road way on the East or sea side he has the Military Board's instructions to proceed with the construction of the road so soon as he shall be informed by you that the plateau is ready for its reception.

face of metal for heavy traffic, and the Board therefore consider the Railway authorities have not virtually made good their engagement, though the same was proposed by them, and according to it only was sanction accorded for the formation of the road at a cost, to Government of two-thirds, and to the Railway Company of one-third the expense of the metalling.

The Military Board however are disposed to believe that it is only requisite to bring these facts again to the notice of the Railway Company Officers to ensure the due fulfilment by them of their own proposal; and accordingly instruct me to request you will be so good as to address those Officers, and induce them to have a durable plateau raised to the proper level suitable for the support of a granite road 60 feet wide from the boatmen's gate to the north east angle of the plateau on which the terminal station is to be erected; and thereby enable the Board's Executive Officer to proceed with the formation of the road thereon. This is the more desirable, as the road running across the station ground cannot be closed until the other is completed.

MILITARY BOARD OFFICE,
Fort Saint George,
24th November, 1854.

I have, &c.,
(Signed) A. H. HOPE,
Secretary.

RAILWAY DEPARTMENT,
Consulting Engineer's Office.

No. 164.

TO THE SECRETARY TO THE MILITARY BOARD,
Fort St. George.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 5150, of the 24th Instant, upon the subject of the roads which it has been proposed to make in the vicinity of the Railway Terminal station.

2. I have lately learned in a conversation with the Superintendent of Government Roads that, in order to make a road on the line proposed, it is necessary to apply a certain thickness of clay, as a bed for the metal. I learned also with some surprise, such being the case, that he had, under the orders of the Board, prepared estimate for the metal only.*

* For the road along the East or Sea face of the station.

3. It appears, however, from your letter that the Board conceive the Railway Company to be under an engagement to form a plateau for the reception of the metalling of the road in question; and you quote the order of Government, No. 139, of the 27th June 1854, in which the word metalling does not appear.

4. I trust I shall be able to show the Board that they have misunderstood the order of Government as well as the suggestion which I submitted, and upon which that order was framed; and further, that such misunderstanding is not justified by the terms in which that suggestion was conveyed.

5. In my report to Government, dated 3d May 1854, copy of which was forwarded to the Board, I said, "It will be necessary both for the convenience of the inhabitants and of the Railway Company to make a substantial broad road way on this line, &c. &c., and" should the Government be pleased to sanction the making of this road the Railway Company might be called upon hereafter to bear some portion of the cost," and the Government order conveys approval of this suggestion throughout.

No. 105, dated 12th May, 1854.

6. The Board would not at this stage of the proceeding have concluded that the Railway Company were to make that portion of the road which consisted of a bed of clay in addition to bearing a portion of the expense.

7. On the 19th of June, I reported to Government as follows; "The Railway station will be raised several feet above the general level of the Esplanade. The road in question must be raised to the same level. It appears to me, therefore, that the expense of raising the road to that level should be first borne by the Railway Company—that they should so far perform the work in fact, that the road—being thus made by Government upon the plateau thus formed, one-third of its cost should be paid by the Company."

No. 139, dated 27th June, 1854.

8. I conceive my meaning, as well as the order of Government founded upon it, to have been perfectly clear.

9. According to the first order, the road, however constructed, was to be made under the orders of the Board; under the second, the additional cost, involved in raising that road to a higher level—that is, the plateau upon which that road was to be made—would be borne by the Railway Company. The soil on the original level was loose sand; the plateau has been made of the same material; and offers after a few days precisely similar basis for the road which the Board were authorized to make. In their letter to the Superintendent of Government Roads, No. 1861, dated the 13th July, the Board call for an Estimate "for making a road sixty feet wide, with a depth of granite of 10 inches, &c." They say also, "your calculation will be confined to the expense of the road only." It is not generally understood that a new road only consists of "metal" except under very favorable circumstances.

10. If anything further were required to show that the Board have misunderstood the orders of Government, in overlooking the necessity of providing for the clay in their own Estimates, it would be found in the fact that while in the case of the Eastern road (now under discussion) the Board's orders to their executive Officer were to "proceed with the construction of the road," while in that of the Road, on the Northern face, they were "to proceed with making the Road;" in the former case the Board now proposes to supply the metalling alone, while in the latter provision has been made for the bed of clay also.

Letter to Consulting Engineer, No. 3857, 14th October, 1854, Paras. 2 and 3.

11. The expense of the layer of clay in question will be comparatively trifling, by whichever party it may be borne, but I cannot admit that the Railway Company "have not virtually made good their engagement" respecting the part they were called upon to bear in this business. It seems that the Board's Estimate in this case has been prepered for metalling a road, not making it; but under the above circumstances I regret that I cannot, without the sanction of Government, call upon the Railway Company to perform more than they have engaged to do—than it was my original proposition that they should do—or than the Government has hitherto sanctioned.

I have the honor to be, &c.,

MADRAS,
27th November, 1854.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

ENGINEER DEPARTMENT,
2 *Enclosures.*

No. 5287.

FROM THE MILITARY BOARD,

To THE CONSULTING ENGIREER FOR RAILWAYS.

SIR,

By desire of the Military Board, I have the honor to forward a plan and Memorandum, in original, from the Chief Engineer, and request that you will return them

to me at your early convenience, with such observations as they may appear to you to call for.

MILITARY BOARD OFFICE,
Fort St. George,
30*th November*, 1854.

I have, &c.
(Signed) A. H. HOPE,
Secretary.

Memorandum on the proposed Road round Clive's Battery and on the Groines to be constructed for its protection.

Clive's Battery is so very exposed that it will be absolutely necessary in the first place to protect the road proposed to be carried round it by a substantial Groine which should run out from the battery itself in order that every use may be made of the advantage which its projection seawards affords for saving length in the groine.

As it has been apprehended that the battery will not thus be so completely protected as it would be if the groine were constructed immediately to the North of it, I would remark that groines protect a shore rather indirectly, by means of the beach which they cause to accumulate in their immediate neighbourhood, than directly, by receiving on themselves the stroke of the sea, except indeed at their outer extremities or heads. On this account, a groine is capable of defending a work, even if placed in rear of it, as well as if placed in front of it; were this not the case, it would not be safe to make the stalk of a groine weaker than its head.

In the present instance, however, the necessity which exists for protecting a portion of beach opposite the Railway Terminus, and extending it to the North of Clive's Battery by means of two other groines renders it quite unnecessary to dwell upon a contingency, against which they will form additional means of provision.

Their erection is absolutely required; for the beach is cut away, during storms, to within the raised platform lately formed in front of the Railway Terminus. Such was the case in March 1853; and the construction of a groine opposite Clive's battery, together with the extension of the two to the southward, will rather increase the probability of such happening again, inasmuch as these works, in arresting the sand from the Southward, will, at the same time, prevent its being deposited to the Northward, in such quantities as it now is in fine weather.

With respect to the actual construction, it has been suggested by Colonel Pears that the Railway might bring down laterite. He estimates that with this assistance the stone could be deposited in the sea at from 12 Annas to 1 Rupee per ton. I think that this plan may be advantageously adopted for the stalks of the groines, using granite for their heads, which are exposed to the first full stroke of a ware.

I would therefore recommend that an application be made to the Railway authorities in order to ascertain if they can undertake any portion of the work or the whole of it.

CHIEF ENGINEER'S OFFICE,
Fort St. George,
23*d November*, 1854.

(Signed) C. E. FABER, LIEUT. COL. OF ENGINEERS,
Chief Engineer.

RAILWAY DEPARTMENT,
Consulting Engineer's Office,

No. 168.

TO THE SECRETARY TO THE MILITARY BOARD,
Fort Saint George.

SIR,

I have the honor to return the Plan, and original Memorandum by the Chief En-

gineer received with your letter, No. 287, of the 30th ultimo, with the following observations.

2. In a report to Government, dated the 15th of April 1853, I stated that it appeared perfectly practicable, and a measure preferable to buying up the property and widening the street, rather to extend the coast line by prolonging the groin lately thrown out, and adding others, carrying a series of these works as far as the Boatmen's village.

3. The main object, which I had in view, being the construction and preservation of a road outside Clive's Battery, I proposed in my letter to your address dated the 6th of July 1853, No. 53, that the two present groins should be extended 50 yards further seaward, and a third groin thrown out from a point, 40 or 50 yards north of the salient angle of Clive's Bastion.

4. This last work would have been, at least for the present, the last of the series; and on this account I considered that, by placing it somewhat north of the Bastion, it would not only serve to accumulate sand during the South West monsoon, in front of that work, but would protect it from the direct action of the North East monsoon. If two other similar works are, as proposed by the Chief Engineer, to be thrown out further north, the circumstances of the case become somewhat different.

5. The Chief Engineer remarks that groins protect a shore rather indirectly, by means of the beach, which they cause to accumulate in their neighbourhood, than directly by receiving in themselves the stroke of the sea, &c.

6. With every deference to the Chief Engineer's opinion, I would observe upon this, that very great mischief arises occasionally from the direct action of the surf ploughing the beach; and that, assuming the North East to be the direction from which the heaviest weather sets in upon Madras (but in this point I may be mistaken), I imagined that a groin placed somewhat North of the Battery would serve to accumulate a bank of sand to the South, during 8 or 9 months of the year, and to protect the work from the vehemence of the North East monsoon during the other 3 or 4.

7. With regard to the point noticed in the 4th para. of the Chief Engineer's Memo., I am aware that the effect produced by these works, in arresting the wear of the beach at one part, is to cause an apparent increase in the wear immediately beyond the last work of a series. The extent, to which this indentation of the coast would be carried, would depend on the intensity with which the surf, current and wind operate; and would, I conceive, be proportioned to the extent to which, from similar causes, the whole coast would have worn away, had not the groin been there.

8. It does not appear to me likely, however, that the extension of the groins Eastward would create an *additional* wear—or deeper indentation—of the existing coast on either flank.

9. Thus, if, with Clive's Battery acting as a groin, the beach has been cut away during storms to within the raised platform lately formed in front of the Railway Terminus, I do not think it probable that the extension of a groin in front of the Battery, 100 yards further out, would increase the chance of the same happening again. There would be an accumulation of sand, during the North East monsoon, North-ward of, and nearly up to, the head of that groin; while, in the South West monsoon, the quantity removed, from the North side, would be no more than was at all times necessary to provide for the normal wear of the coast.

10. I allude here to this wear under ordinary circumstances; but as I believe that great damage is done, by the direct action of violent storms, I feel that the two additional groins, shown in the plan, in front of the Terminus are necessary to the complete security of the station wall, and the road along the sea face of the station. It appeared to me however that as far as the interests of the Railway Company were

concerned, the danger was too remote, and the damage likely to be done not sufficiently important, to warrant my recommending any expenditure on their part for this purpose, until the effect of the works proposed in my letter to your address on the 6th July 1853 had been seen.

11. I shall inform the Board as soon as possible of the views of the Railway Officers regarding the use of laterite brought by rail for these groins.

I have the honor to be, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS,
4th December, 1854.

APPENDIX No. 3.

Railway Department,
Consulting Engineer's Office.

No. 52.

FROM LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways,

TO THE CHIEF SECRETARY TO GOVERNMENT,
Fort Saint George.

SIR,

I have the honor to submit, for the information of Government, a survey and Report by Lieutenant Roberts of a portion of the country between Madras and Cuddapah, selected as the most direct course for a line of Railway between those two points, with a view to ultimate extension to Bellary.

2. In a letter from the Government of India dated the 4th March 1853, it was ordered that such a survey of the country be made, as will set at rest the question of the practicability of a line from Madras to that place (Bellary) through the District of Cuddapah.

3. In my letter to your address of the 12th March 1853, I stated that my views of the difficulties to be encountered in getting into the Cuddapah District,* had been much modified upon cursory examination of the country, and I proposed a detail survey of the line.

* Extract Minutes of Consultation No. 289 dated 22d March 1853.

4. Lieutenant Roberts was placed at my disposal, and my instructions to that Officer will be found in the Appendix A.

5. That Officer made a general examination of the country through Cuddapah and Bellary, to the "Kistnah" (the Bombay frontier,) and looked carefully at the several Passes in the Vencatagherry range of hills, (the Eastern boundary of the Cuddapah District.) As soon as a Surveyor was placed at his disposal, he commenced marking out a line from Cuddapah towards Madras.

6. Under the sanction* of Government, I have lately examined the country the whole way to Bellary: and being perfectly satisfied that the only questionable part of the line in an Engineering point of view, had been carefully surveyed and levelled by Lieutenant Roberts, I instructed him to cease work in the field, and prepare his plan and Report as soon as practicable—these are now submitted.

* Extract Minutes of Consultation No. 146 dated 30th June 1854.

7. It will be seen by reference to Sheet 77 of the Indian Atlas, that the whole or nearly the whole of the district* is drained by one river the "Pennaur," which rising in Mysore, about Nundidroog, pursuing a nearly Northerly course for some miles through the Bellary District—takes a sudden turn to the Eastward—finds an opening through the hills which form the Western boundary of the lower Talooks of Cuddapah, and after receiving the waters of five tributary streams falling into it from opposite directions, the "Koond" and the "Juggle aur" from the North,—the "Chitrawutty," the "Paupugnee" and the "Cheyaar" from the South,—passes with difficulty through the Eastern range of hills which separates Cuddapah from Nellore, and flows into the sea about 15 or 20 miles from the latter Town.

* Cuddapah.

8. The Cuddapah district is divided into two portions, nearly equal in extent: the one above the Eastern Ghauts—a portion of the Balaghaut—and connected (though gradually falling towards the East) with the table land of Mysore; the other below the same ghauts, and having no higher level than that which characterizes the plains of the Carnatic generally.

9. Of the present high roads, one leading from Madras into the valley of the "Cheyaar" and thence to Cuddapah, takes the course which has been now surveyed for the Railway.

Another, preferred as it seems not only from the country being more favorable, but from nearly 100 miles of the great Western road being available, leaves that road at Chittoor, and passing by the Damulcheru Pass on to the Balaghat Talooks of Cuddapah, descends again by the Goolcherroo Pass to the plain whereon the Town of Cuddapah stands.

10. In speaking of carrying a line of Railway through Cuddapah, it has always been understood that the valley where that Town stands is intended; and indeed that portion of the district which is fenced in on all sides by hills constitutes by far the most valuable part of the district, as it has always been the most difficult of access. The Cotton and Indigo of Cuddapah are chiefly found in the Talooks of Cumbum, Dhoor, Budvail, Sidhout and Chitvail—all below the ghauts; some account of this district will be found in a letter from a late Collector, Mr. Forbes, which was received by me too late for insertion in the Report* for which it was required.

Appendix B.

* March 5th 1851.

11. There appeared two modes of getting into the District of Cuddapah. The one by a line taken off from the Madras Railway at a point 12 miles from Madras, and thence over the ridge near Tripetty which forms the head of the "Chitvail" valley, and so down that valley to Cuddapah. The other by running up North, or nearly so from Madras; leaving all the hill country and the Cuddapah district to the left, and finding some convenient opening through the Vencatagherry range of hills into the valley of the "Pennaur."

12. These several projects are touched upon by Mr. Roberts, and appeared to have been kept in view by that Officer during his examination of the country.

13. There appears to be no practicable pass through the hills last mentioned till we have crossed the "Pennaur," and thus placed the town of Cuddapah and its neighbourhood out of our line. There is then the "Doorenalla" Pass by which a line might with little difficulty be carried into the Budvail valley, and from thence, leaving Cuddapah 15 or 20 miles to the South, direct viâ Gooty to Bellary. The line* measured in the Map would give a distance between Madras and Bellary of 300 miles, or allowing for curves 310 miles.

* Marked by a yellow line on the accompanying Map.

14. The other line,† that taking off from the Madras Railway near Madras, and passing by Tripetty into the Chitvail valley, would follow the general course of the present road the whole way to Bellary. The distance from Madras to that place by this line measured on the Map, would be about 296 miles—of these 12 would be on the present Railway‡—284 miles would remain to be made in order to reach Bellary by this route.

† Marked by a red line on the Map.

‡ We might perhaps avail ourselves of a few miles more on the present Railway.

15. I understand two objects to be chiefly aimed at in projecting a line of Railway through Cuddapah. The one is to complete, by the shortest possible route, the connexion with Bombay, by meeting the Great Indian Peninsula near Bellary. The second is to open up the District of Cuddapah itself.

16. Of the two lines above described, the former would under all the circumstances be, in my opinion, the best for the one political object; at the same time that it would confer many benefits, both commercial and social, upon the districts of Bellary, Cuddapah, and Nellore. But to give Cuddapah itself the full benefit of the Railway, the latter line by Ballapilly and Chitvail valley must be selected, as passing through the heart of the district and its Capital, and accomplishing the political objects quite as well as the other, though at, perhaps, somewhat greater cost.

17. This line is therefore the one chosen for actual survey—its course is shewn in the accompanying sheets of the Atlas.

The portion now surveyed shewn by a strong red line, the remainder dotted on to the present Railway.

For the first 65 miles there is no difficulty of any kind, no river of any magnitude. The country rises considerably, but gradually, till we reach Curcumbady. From thence to Balapilly, 11 miles, the narrow passage between the "Tripetty" range of hills and those of Vencatagherry, is filled up with a series of rugged ravines, the characteristic rock being a description of clay slate, the peculiar nature and position of which has constituted hitherto one of the chief obstacles to the construction of a good road. This part of the country is covered with jungle also, but there is no such difference of level between any two points on the line, hereabouts, as to lead us to expect either very heavy work or very bad gradients.

18. Balapilly, the head of the drainage to the South, stands at the foot of a ridge, not very high, but abrupt, which forms a tie across this narrow gorge, throwing the waters off on both sides, to the North and South. This is an awkward place. It is not possible to cross it by a direct line; and Mr. Roberts has made the most of the features of the country by leading a line down at a maximum slope of 1 in 100 with several curves, the minimum radius of which is ½ mile. This is an objectionable feature in the line, but it does not appear possible to avoid it.

19. From the top of this pass the line runs steadily down, 40 miles, to the "Cheyaar," a broad shallow sandy river, the bridging of which will be troublesome and expensive. We then arrive at a low range of hilly country, which seems to jut out from the Eastern ghauts, and fills up the whole of the re-entering angle between the Cheyaar and the Pennaur. This range must be crossed; and I find it can be done by an ascent for 3½ miles at a rate of 1 in 108, and a fall, for 3 miles more, at a rate of 1 in 85.

20. From this point to Bellary there is no serious difficulty with the exception of the rivers, of which, including the "Cheyaar," just mentioned, there will be found no less than 5 broad streams with sandy beds, expensive to bridge, no doubt.

21. Mr. Roberts estimates the whole line, from the junction with the Madras Railway to Bellary, at Rs. 163 Lacs, being at an average rate of Rs. 57,000 per mile.

This includes every thing but rolling stock and other furniture, &c. In a former report dated the 25th April 1854 I stated my belief that this line ought not to cost above Rs. 80,000 per mile. Mr. Roberts has, I observe, assumed a somewhat lower rate, (£12 per ton including all expenses,) than that prevailing at present, for his iron. In other respects the estimate is liberal, and I think it may be confidently expected, that Rs. 70,000 per mile, would complete, and stock this line.

22. Having thus ascertained the general character of the more direct line from Madras, by Cuddapah, to Bellary, it remains to be considered whether the desired end, that of meeting the requirements of this important district, and at the same time completing the connexion with Bombay, viâ Bellary, may not be attained by other and more effectual measures.

23. In considering the line or lines of Railway to be undertaken, we have to bear in mind at all times the actual state of existing communications. Common roads, we may, when important interests are at stake, disregard; as these are easily diverted: but the general direction and influence of other Railways, or even navigable Canals, must be taken into consideration.

24. We may, in the present case, assume (the works having been actually sanctioned though not yet fully carried out) that there are existing lines* of Railway from Madras to Coimbatore and the Western Coast, with branches to Bangalore and the Neilgherry Hills; and another from Bombay to the vicinity of Bellary, where it is intended that a junction shall be formed with the Madras Railways.

* Marked by a blue line in the accompanying Atlas.

25. It appears to be well nigh determined that there shall be a canal running along the Eastern coast of this Presidency: and that occasional branch canals will, wherever the country admits of it, be carried from the trunk canal towards the interior.

26. This being the state of the case, and the impossibility of carrying out—the inexpediency of attempting to carry out—a great extent of Railways simultaneously, being acknowledged, the point to be determined is, how shall the Railways already sanctioned, and in course of execution, be extended with the greatest advantage?

27. It seems to me that the work which would confer the greatest amount of benefit upon both Government and people, would be the completion of the wanting link between Bangalore and Bellary.

28. By this measure the social and political ends, aimed at by establishing a connexion between the two Presidencies, would be accomplished as well—better I think I can shew—than by the line through Cuddapah; but that district would derive little benefit from it.

29. We are not yet arrived at that stage in our proceedings, when we can lay rails solely for the advantage of this or that particular district; nevertheless if there be a district, in this part of India, that merits such high consideration, it is Cuddapah; and sooner or later I think a line

should be laid—for this among other purposes—direct from Bellary across the Northern talooks of Cuddapah and towards the coast.

30. If this project were approved we should have, instead of the one line from Madras (or some point in the present Railway near it) direct across the Balapilly pass to Cuddapah and Bellary (296 miles,) one from Bangalore to Bellary—about 160 miles—and one from Bellary to some point meeting the coast navigation in the District of Nellore. I have assumed a spot on the plain near the village of "Pullapaud," where the canal navigation might be expected to begin. The length of the line from Bellary to this point (marked by a yellow line on the map) would be 175 miles nearly.

31. Thus the objects we have in view would be accomplished by 284 miles of Railway on a line unfavorable in some parts; while the same object (and much more) would be attained, in the other case, by two lines accommodating different tracts, amounting together to 335 miles, but lying over more favorable lines of country.

32. Of these two lines it is necessary that I should give some further account. That proposed for the benefit of the Cuddapah District as well as that of Bellary and Nellore, would run nearly due East from Bellary to Gooty and Yadakee; and leaving the Cuddapah road near the latter place, would cross the valley of "Dhoor" and "Budvail" by Nundiallampett, and get out into the Nellore district, through the above mentioned "Doorenalla" Pass, being the pass which, of all yet known in this range, offers the greatest facilities for such purpose.

33. With the exception of this pass, which is fully described in Mr. Roberts' Report of the 20th March 1854, and the trifling obstacle presented by a low but abrupt ascent from Yadakee to the plains bounding the Dhoor valley on the West, there is no difficulty whatever throughout the whole length of this line—four out of the five Rivers mentioned as requiring to be bridged on the Cuddapah line, are avoided altogether. The "Hugry" alone near Bellary would require bridging.

Cheyaur.
Paupugnee.
Chittravutty.
Pennaur.

34. With a Railway connecting Bellary with Madras viâ Bangalore, the chief object in the construction of the above line would be commercial, the conveyance of the productions of Bellary and Cuddapah to the Eastern coast, in exchange for Salt and European manufactured goods—such a line would pass within easy reach of the town of Cuddapah, and actually through the most important Talooks of "Dhoor" and "Budvail," accommodating at the same time Cumbum to the North, Sidhout and Chitvail to the South.

35. I have supposed, for the present, that it would stop short at the head of the inland coast navigation, but I look upon it nevertheless as a proper feature in a future system. It might either be extended hereafter to the coast direct; or its point of junction with the canal would form a station in a future great Northern line* from Madras towards Calcutta.

* Marked by a yellow line (dotted) on the accompanying Map.

36. The line from Bellary direct to Bangalore would be over a tract of country the most favorable of all I have yet seen for the construction of a Railway. From Bellary across the valley of the "Hugry" and up that of the Pennaur, there is no difficulty of any kind. Approaching the sources of the latter river a few miles South of Goree Bednore, we find an abrupt ascent—a low range of ghaut—by which we have to pass finally (having already ascended some 1000 feet from Bellary) on to the table land of Mysore. Even at this point there would be no difficulty whatever in finding a line of ascent involving no worse gradient than 1 in 100; and it is probable that on a more close and detailed examination of the neighbourhood than I have yet had time to make, we might find an approach to the Mysore table land of a different and less abrupt character.

37. The height overcome at this little pass does not appear from aneroid observations to be above 300 feet. The total difference of level between Bellary and Bangalore is 14 or 15 hundred feet, giving in a distance of 160 miles an average of 10 feet per mile.

38. Under present circumstances I think the construction of the line from Bellary to Bangalore would confer a larger amount of benefit—would exercise greater influence on the habits

and well being of the people of this Presidency—than any line of equal or even of much greater length that could be mentioned.

39. Assuming the line from Bombay to Bellary and from Madras to Bangalore with the others now in the hands of the Madras Railway Company to be facts—this connecting link of 160 miles would not only complete the communication with Bombay, but it would greatly facilitate and promote intercourse between the Northern and Central portions of this Presidency—the province of Mysore—and the Southern Districts about Salem and Trichinopoly, as well as those around Madras. It would connect the Military station of Bellary directly with that of Bangalore, and the Head Quarters of the Army: and would give to Bellary, in such terrible seasons as the present, the full and immediate benefit of the usually abundant supplies of grain in the Mysore Country.

See Letter from the Collector of Bellary 30th August 1854. Appendix C.

40. It will be seen, that, while this line would confer, in a commercial and social point of view, greater benefits on the country at large than the direct line from Madras through Cuddapah would: I propose it also as a present substitute for the latter, in the attainment of the political ends aimed at by the connexion between Madras and Bombay.

Madras to Bellary by Cuddapah, 296.
do. do. by Bangalore, 360.

41. It will be objected that by this line the distance between Madras and Bellary would be 64 miles greater than by the other. At the ordinary rate of passenger trains this would involve a difference of time of 3 hours. All other things alike, there would of course be a difference of *cost* in proportion to the distance; but in this case there would not, for this reason, that the cost of construction on the direct (Cuddapah) line would be much heavier than on that between Bangalore and Bellary, and that the amount of traffic would be less; both of which circumstances would necessitate a higher charge on the unit of traffic.

* Assumed point of junction of Cuddapah line with that now under construction.

42. I may illustrate this in the following manner. The line from Avady* to Bellary, viâ Bangalore, is made up of 3 distinct portions—

1st to Vaniembady........................	110 Miles.
2d to Bangalore........................	80 Miles.
3d to Bellary........................	160 Miles.

The first portion, the grand trunk is likely to have before long a heavy traffic upon it, say 200,000 tons annually, mileage is 200,000 × 110 = 22,000,000

Assume on the 2d portion... 70,000 Tons.

The mileage will be.......... 70,000 × 80 = 5,600,000

On the 3d portion 70,000 tons, mileage is 160 × 70,000 = 11,200,000

Total Mileage traffic.................. 38,800,000

If the capital cost average on the whole line Rs. 60,000 per mile, the interest will be, at 5 per cent., Rs. $\frac{60,000 \times 350}{20}$ = Rs. 10,50,000, to be divided among 38,800,000, throwing a charge, for interest, upon each ton per mile, of $\frac{10,50,000 \times 16 \times 12}{38,800,000}$ or about 5 pice per ton.

43. Now, if we construct the direct Cuddapah line at a cost of Rs. 80,000 per mile, and allow, with its own traffic, and that from Bellary, traffic to Madras, (there will be little other) 70,000 tons annually, we shall have interest on first cost 11,20,000 Rupees.

Mileage 70,000 × 280 = 19,600,000 and the charge for interest on the unit of traffic will be $\frac{11,20,000 \times 16 \times 12}{19,600,000}$ = 11 pice.

Assuming the working expenses at 2 pice the ton, the charge would be in the former case 5 + 2 = 7, in the latter 11 + 2 = 13. The total charge would be by the Bangalore route to Bellary 360 (miles) × 7 (pice) = Rupees 13-2-0. By the direct Cuddapah line 280 (miles)

× 13 (pice) = Rupees 19-0-0. Although I cannot pretend to form in either case an exact estimate of the traffic, I have no doubt that the relative traffic upon the two lines would be something like the above; and the effect on the tariff is obvious.

44. This leads me to notice as favoring the Bangalore and Bellary lines the very important fact that it would be an extension and junction line; while the other would be a competing line. Any two lines may be considered competing, when the construction of the one tends to diminish the traffic on the other. Looking at the map, we cannot fail to observe that when a line from Madras to Bangalore is once made, such a line would lose traffic by the construction of a line from Madras by way of Cuddapah to Bellary; and that when in the ordinary course of things the wanting link between Bangalore and Bellary were supplied to complete the means of internal communication from South to North, there would be thenceforward two nearly direct lines from Bellary to Madras.

45. In conclusion, I would recommend after a careful consideration of the subject, and personal examination of a great part of the country in the districts concerned, that the direct line from Madras by Balapilly to Cuddapah* and Bellary be not adopted; that as fulfilling better the objects aimed at in projecting that line, and being still further and more generally useful, two lines be carried out, one from Bellary running East till it meets the Canal navigation of the Eastern Coast at some convenient spot, as the village of Pullapaud, and the other from Bellary to Bangalore, the latter being the wanting link in a system already sanctioned for the perfecting the means of communication between Madras and Bombay.

* Marked in the accompanying Map by a red line.

46. I would also recommend, that, if these two lines cannot be carried out simultaneously, that between Bangalore and Bellary should be undertaken first.

47. It will perhaps not be expected that I should say much on the subject of the Agency by which any of these lines should be carried out. I have on a former occasion given my opinion that they would be constructed to greater advantage by Government servants than by a private Company; and although, while the servants of the latter are gaining experience daily, the arguments in support of these views daily lose something of their force, I entertain that opinion at the present time.

48. One great difficulty experienced in conducting Railway works in India is found in the present very imperfect means of locomotion; and it is a difficulty—at least in its degree—peculiar to this country. The Agent and Chief Engineer of the Madras Railway Campany have now 500 miles under their charge: and the time and labour expended, by the latter Officer in passing—in the ordinary exercise of a necessary supervision—from one end of the line to the other, are very great. An Officer charged with the execution of such a work in this country gains little by moving about at 100 miles a day—about the utmost he can accomplish with considerable fatigue—because unless a portion of his Office move with him—and they cannot travel at that pace—there is an interruption in the conduct of the general business of the line, as a set-off against the advantage of a personal visit to a particular spot.

49. If therefore any one of the three lines which I have been considering were undertaken simultaneously with those already sanctioned, they would add very greatly to the labours and difficulties of the one Chief Engineer.

50. It is true the Railway Company, if their undertaking were thus extended by authority, might place separate portions under different Executive Officers; and this would, I think, be their wisest plan so long as the means of travelling continue as imperfect as they are now.

51. I think however it would be conducive to the interests of the country and ultimately of the Railway Company, if the Government would take in hand one of these lines and execute it by its own Officers. The working of such line or lines when completed might be leased upon certain conditions either to the existing Railway Company or other body; and in fact there would be little difference between that and the present mode of executing the Railway, beyond the simplification of the machinery of management, and the facility of employing in their execution some, at least, of the men best fitted from their local experience for carrying out such works with expedition and success.

52. If such a line as that from Bangalore to Bellary were thus sanctioned, one experienced Engineer Officer and four Assistants with European Inspectors, some of whom might if necessary be obtained from home, precisely as the Railway Companies now obtain theirs—would be sufficient for the whole line of 160 miles.

53. In conclusion, I have to solicit the sanction of Government to the further employment of Lieutenant Roberts, under my orders, in making a more minute examination of a portion of the country between Bangalore and Bellary, and a detailed survey of that line.

54. The accompanying papers and the several reports by Lieutenant Roberts which have been submitted from time to time, render it unnecessary for me to do more than record the very high sense I entertain of the care and ability displayed by that Officer in the performance of this duty. I believe that nothing more remains to be done towards the determination of the best line (in an Engineering point of view) for a Railway through the Cuddapah District.

55. Since writing the above, I have been favored with a communication from Mr. Maltby, 3d Member of the Board of Revenue, now on special duty in Bellary, regarding the employment of the people in that District in the event of the present drought continuing: and enquiring whether a line of Railway is likely to be soon commenced in that neighbourhood.

56. Under present circumstances there are thousands of people crying out for work in that District—more suitable employment than the Earthwork of a Railway could not be found for them. The work would relieve their present necessities, and tend more than any other to prevent a recurrence of distress like the present. Whichever of the lines I have above described were to be adopted, it is important to observe that, the first 50 miles from Bellary lying over a perfectly open plain, the proper course for the line would require no further consideration—it does not admit of a doubt—and that the people might be set to work at once.

I have the honor to be,

Sir,

Your most obedient Servant,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Camp, Chittoor,
7th October, 1854.

P. S.—The fair copy of the survey has not yet been received from Lieutenant Roberts. I hope to be enabled to forward it with certain sheets of the Indian Atlas in illustration of the foregoing report in a few days.

T. T. P.

APPENDIX A.

MEMORANDUM.

ON THE SURVEY OF A LINE OF RAILWAY FROM MADRAS TO BELLARY VIA CUDDAPAH.

The old high road from Madras to Cuddapah through Tripassore crosses the Naggery and Waramalay passes to Circumbody, thence entering by the Baulpully pass the Chitvail valley, falls to the Cheyaur river which is crossed near Nundalore.

Although this line presents considerable difficulties in the construction of a common road, it is perhaps, as far as we can judge from the map, the most favorable for getting into Cuddapah.

The two first mentioned passes "Naggery" and "Waramalay," may be avoided altogether and it may be hoped that the Baulpully pass will prove no very serious obstacle to the construction of a line of Railway.

The general course of the line to be first examined, therefore, would be as follows:

Taking off from the line of the Madras Railway at or near Avady, about 12 miles from Madras, the line will run in a direction about North West and strike upon the bank of the Namaveram river 6 or 8 miles South of Naglapoorum. Following for a few miles the right bank of that stream it would sweep round into the narrow valley of "Areh" or Royapady, taking here a direction nearly North towards Calestry. When within 6 or 7 miles of that town it turns to the Westward and passing through an opening in the range of hills, crosses the Soonamookee river and from thence over a very favorable country to Circumbody.

From Circumbody the line would probably follow the general course of the present road, a few trials will be necessary to hit off the best line to Baulpully and thence over the pass.

It is not intended in any case that the actual course of the present high road should be followed. In this instance its general direction serves to indicate the best course of a railway—but the line of the latter should be carried as direct as possible, without regard to minor undulations or to the subordinate features of the country. Deviations can be arranged subsequently wherever the Estimates show them to be necessary or expedient.

There will perhaps be no difficulties after Baulpully until the Cheyaur is crossed: when the rugged tract lying between that valley and the "Pennaar" has to be got over. The line of the present high road may be first looked at, as it will probably have taken the easiest route; but should this present serious difficulties, careful enquiry must be made upon the spot and an examination of such lines as may be pointed out by the inhabitants or may have a likely appearance on the map. It is supposed that there will be no difficulties in finding a favorable line from Ontimetta to Cuddapah.

From Cuddapah to Bellary the first line to be examined will be that by Chintacoonta and Tadputree. Whether from this latter place it should be carried on to Gooty, or should leave that place a few miles to the North, is one among many questions that can only be decided by enquiries on the spot and by a careful examination of the country.

The only serious difficulties, then, to be expected on this line are about Baulpully—between Nundalore and Ontimetta, and between Tadputree and Bellary, and the best plan will be for the Surveying Officer to take each of these portions of the line in its turn and determine the best way of getting over the difficulties. In doing this, he should ride over the ground—study the features as they appear to the eye, and as they are laid down on the map, and cause trial sections to be taken on several of the most promising lines. Every portion of the line between Madras and Bellary must be thus examined, and the best route determined before the final survey is made; but it may be left to the discretion of the Surveying Officer to complete both the preliminary examination and the final survey of each portion before going on to the next; or to go through with the examination of the whole line, before making the final survey of any portion of it—as may suit his convenience.

These surveys are not intended to do more than afford satisfactory evidence as to the practicability and probable cost of a line of Railway, the line therefore is not to be laid out with that scrupulous care that would be necessary in staking out one for actual construction.

The plan we generally follow is this:

The general direction having been determined on, the line is set out by flags as nearly straight as possible—strong pickets numbered are driven in at any convenient distance apart—we generally take 110 yards. The centre line is chained and a survey made of the adjacent land to an extent of about 100 yards on each side of the line—all the information given in Form A. is collected by the Surveyor in the course of his operations and carefully noted—viz. the character of the land—the streams, channels, &c., the number and position of level crossings—that is common roads, for which means of crossing must be provided—and description of soil. The levels are subsequently taken along the centre line—cross sections being taken occasionally wherever the character of the country give them importance. The curves are not laid down but the angle carefully noted at every bend in the centre line and marked on the survey.

In addition to the above information, which bears upon the probable cost and characteristics of the line, no opportunity should be lost of gaining information regarding the resources of the

district through which the line passes, the materials for building available, the probable amount of traffic to be expected, the feelings of the people respecting the projected work.

It may be hardly necessary to add as a general rule in laying out a line for a Railway that assuming the difference of level between the two terminal points to be not such as would render it advisable to seek a circuitous route, the best course for a Railway is that upon which there is found the least possible deviation whether in a horizontal or vertical direction, from an imaginary line connecting two such points—such a line is never attained in practice but it is to be kept in view as the standard by which all other lines are cæteris paribus to be judged.

The following are the statements, reports, &c. usual in the Railway Survey Department.

Statement according to Form A, Surveys and Sections (trial) of portions of the line drawn upon medium paper, the Survey and Section on the small sheet (see accompanying sketch) the former to a scale of 200 yards, the latter 50 feet to the inch. These sheets are numbered consecutively and forwarded with occasional reports. General report of progress every week, and special and general reports upon the whole or particular portions of the line when called for.

(Signed) T. T. PEARS,

Madras, 27th July 1853. *Consulting Engineer for Railways.*

To Lieutenant ROBERTS,

Engineers.

(True Copy)

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

APPENDIX B.

Cuddapah, Collector's Office,
22d September 1851.

No. 559.

From H. FORBES, Esq.,

Collector of Cuddapah,

To Major T. T. PEARS, c. b., *Engineers,*

Madras.

Sir,

1. I have to express my regret that your letter of the 23d of October has been so long unanswered, and that my short acquaintance with the Province does not enable me to afford you any information but such as I can collect from the records and accounts.

2. The population returns for Fusly 1260 have not been yet received, but those furnished for Fusly 1259 gave a total of 1,228,546 persons. The revenue of Cuddapah for the Fusly which has just closed was Rs. 25,02,590-7-0 derived from the following sources.

	Rs.	A.	P.
Land	21,89,541	1	7
Moturpha	1,52,057	11	10
Abkarry	1,18,821	0	0
Stamps	27,587	8	0
Sundry Rents	14,583	2	0

3. The following are the names of the Chief Towns in the district with the population of each.

Cumbum 11,914

Doopaud talook	Markapoor	2,994
	Budwail	6,295
	Jummulmudgoo	3,593
Doovoor talook	Prodatoor	7,760
	Koilgoontlah	7,079
	Chitwail	7,921
	Sidhout	3,867
Chennoor talook	Cuddapah	14,705
	Camalapoor	3,157
Goorumcondah talook	Voilpaud	6,488
	Muddenpully	7,773
Poolevendalah talook	Cuddree	6,888
	Royachoty	3,377
	Poonganoor	7,004

4. The talooks of Koilgoontlah, Jummulmudgoo, Poolevendalah, and Doovoor produce the greater proportion of the cotton, grown in Cuddapah—in Muddenpully and Goorumcondah sugar is chiefly manufactured, and indigo is grown most extensively in Chennoor, Camalapoor, Budwail, Cumbum, Sidhout, Chitwail and Doovoor. The ordinary wet and dry grains are produced in the other Talooks and of manufactures, besides those of indigo and sugar, there are hardly any—cloth is made in Doovoor, but of an inferior quality, and none is produced in the province that will compare with the cloths of Nellore and the Northern Circars—sugar, cotton and indigo are sent to Madras where they are sold to the European Merchants for exportation to England and the roads generally traversed are the direct road from Cuddapah by Kircumbody and Naggery, or by Chittoor and Vellore from Muddenpully and Gurrumcondah. Common carts are the only means of conveyance and the roads are very bad—so much so that in the Province itself a wheel with spokes is very seldom seen, and almost all the carts are mounted on solid discs of wood, with a very narrow tire and with a revolving wooden axle.

5. I enclose a statement of the ordinary Articles of import and export with the supposed value of each, but since the abolition of the sayer duties no accounts of value have been kept, and therefore no accurate statement can be given. It is probable that the sums set down in the statement now referred to are below rather than above the actual value, and by a reference to the sayer account of Fusly 1250, I find that the value of indigo exported in that year is entered as Rupees 12,84,243.

6. The usual rate of hire in Cuddapah is for a cart for 10 Miles	Annas	12
For a good load Bullock	do	4
For an ordinary do	do	3
For a Cooly	do	2

7. I have lately paid Rupees 17½ each for some carts to take treasure to the Presidency, but as there is but little to bring back to the District, an offer of half hire will collect any number of return carts.

8. I forward with this letter some statements of the traffic on the different roads for the months of January, February, March, April and May, 1851.

I have &c.

Cuddapah, Collector's Office,
22d September 1851.

(Signed) H. FORBES,
Collector.

To MAJOR T. T. PEARS, C. B., *Engineers,*
Madras.

(True Copy)

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

STATEMENT SHEWING THE DIFFERENT ARTICLES EXPORTED AND IMPORTED TO AND FROM THE DISTRICT OF CUDDAPAH.

Imports.

No.	Article	1. Value of articles imported from the eastward, viz., Nellore, Madras, &c. Rs.	A.	P.	2. Value of articles imported from the southward, viz., Madura, Chittoor and Vallajapett, &c. Rs.	A.	P.	3. Value of articles imported from the westward, viz., Bellary, Darwar, Mysore and Canara, &c. Rs.	A.	P.	4. Value of articles imported from the northward, viz., Guntoor, Kurnool and Hyderabad, &c. Rs.	A.	P.	5. Total value of imports. Rs.	A.	P.
1	Indigo,	84,000	0	0	0	0	0	28,000	0	0	28,860	0	0	1,40,860	0	0
2	Arica Nuts,	0	0	0	0	0	0	3,39,400	0	0	0	0	0	3,39,400	0	0
3	Bales of cloth,	13,040	0	0	12,140	0	0	44,780	0	0	7,720	0	0	77,680	0	0
4	Grain,	1,608	0	0	0	0	0	60,017	0	0	3,978	0	0	65,603	0	0
5	Cotton,	0	0	0	0	0	0	56,000	0	0	0	0	0	56,000	0	0
6	Sugar,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Cotton red thread,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Gunny,	0	0	0	0	0	0	0	0	0	160	0	0	160	0	0
9	Cotton thread,	78,700	0	0	0	0	0	0	0	0	0	0	0	78,700	0	0
10	Chillies,	0	0	0	0	0	0	42,750	0	0	800	0	0	43,550	0	0
11	Dye powder,	0	0	0	0	0	0	0	0	0	26,980	0	0	26,980	0	0
12	Seecaya or soap nuts,	0	0	0	0	0	0	485	0	0	0	0	0	485	0	0
13	Oil,	0	0	0	70	0	0	0	0	0	0	0	0	70	0	0
14	Sandal wood,	0	0	0	0	0	0	1,600	0	0	0	0	0	1,600	0	0
15	Dry cocoanuts,	0	0	0	0	0	0	9,470	0	0	0	0	0	9,470	0	0
16	Lamp oil seeds,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Pepper,	0	0	0	0	0	0	7,534	0	0	0	0	0	7,534	0	0
18	Ghee,	0	0	0	0	0	0	10,800	0	0	0	0	0	10,800	0	0
19	Tobacco,	0	0	0	0	0	0	0	0	0	1,200	0	0	1,200	0	0
20	Jaggery,	3,580	0	0	0	0	0	1,500	0	0	0	0	0	5,080	0	0
21	Cumblies,	0	0	0	0	0	0	250	0	0	0	0	0	250	0	0
22	Medicinal drugs,	5,280	0	0	84	0	0	634	0	0	0	0	0	5,998	0	0
23	Saltpetre,	0	0	0	0	0	0	265	0	0	0	0	0	265	0	0
24	Thin Jumboo mat,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Silk thread,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Cummin seed,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Bales of silk cloth,	0	0	0	3,240	0	0	0	0	0	1,240	0	0	4,480	0	0
28	Onions and Garlic,	0	0	0	0	0	0	0	0	0	20	0	0	20	0	0
29	Tamarinds,	0	0	0	0	0	0	0	0	0	1,500	0	0	1,500	0	0
30	Turmeric,	200	0	0	0	0	0	0	0	0	0	0	0	200	0	0
31	Iron and Steel,	0	0	0	0	0	0	31	4	0	0	0	0	31	4	0
32	Gingely oil seed,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Brass and Copper,	0	0	0	500	0	0	500	0	0	0	0	0	1,000	0	0
34	Spun Cotton,	0	0	0	0	0	0	9,000	0	0	0	0	0	9,000	0	0
35	Salt,	720	0	0	0	0	0	0	0	0	0	0	0	720	0	0
36	Hides,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Sugar Candy,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Betel,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Silver lace,	0	0	0	0	0	0	0	0	0	540	0	0	540	0	0
		1,87,128	0	0	16,034	0	0	6,13,016	4	0	72,908	0	0	8,89,176	4	0

Exports.

No.	Article	6. Value of articles exported to the eastward, viz., Nellore, Madras, &c. Rs.	A.	P.	7. Value of articles exported to the southward, viz., Chittoor, Vallajapett, &c. Rs.	A.	P.	8. Value of articles exported to the westward, viz., Bellary, Darwar, Mysore and Canara, &c. Rs.	A.	P.	9. Value of articles exported to the northward, viz., Guntoor, Kurnool, Hyderabad, &c. Rs.	A.	P.	10. Total value of the exports. Rs.	A.	P.	Remarks.
1	Indigo,	5,69,916	0	0	0	0	0	2,76,350	0	0	1,280	0	0	8,47,546	0	0	
2	Arica Nuts,	81,600	0	0	0	0	0	0	0	0	47,600	0	0	1,29,200	0	0	
3	Bales of cloth,	44,994	0	0	9,710	0	0	37,496	0	0	15,589	0	0	1,07,789	0	0	
4	Grain,	31,781	0	0	148	8	0	5,000	0	0	9,300	0	0	46,229	8	0	
5	Cotton,	99,981	9	0	4,000	0	0	0	0	0	0	0	0	1,03,981	9	0	
6	Sugar,	4,16,200	0	0	0	0	0	0	0	0	0	0	0	4,16,200	0	0	
7	Cotton red thread,	0	0	0	42,000	0	0	21,000	0	0	0	0	0	63,000	0	0	
8	Gunny,	50,000	0	0	0	0	0	70,000	0	0	0	0	0	1,20,000	0	0	
9	Cotton thread,	2,100	0	0	0	0	0	0	0	0	24,000	0	0	26,100	0	0	
10	Chillies,	300	0	0	150	0	0	0	0	0	0	0	0	450	0	0	
11	Dye powder,	0	0	0	30	0	0	3,500	0	0	1,950	0	0	5,480	0	0	
12	Seecaya or soap nuts,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	Oil,	9,150	0	0	0	0	0	0	0	0	0	0	0	9,150	0	0	
14	Sandal wood,	0	0	0	0	0	0	0	0	0	8,000	0	0	8,000	0	0	
15	Dry cocoanuts,	250	0	0	0	0	0	300	0	0	0	0	0	550	0	0	
16	Lamp oil seeds,	6,735	0	0	0	0	0	0	0	0	0	0	0	6,735	0	0	
17	Pepper,	2,250	0	0	0	0	0	0	0	0	1,100	0	0	3,350	0	0	
18	Ghee,	7,450	0	0	0	0	0	24,000	0	0	0	0	0	31,450	0	0	
19	Tobacco,	21,631	4	0	1,875	0	0	693	5	4	0	0	0	24,199	9	4	
20	Jaggery,	3,975	0	0	0	0	0	2,400	0	0	13,140	0	0	19,515	0	0	
21	Cumblies,	1,775	0	0	150	0	0	0	0	0	0	0	0	1,925	0	0	
22	Medicinal drugs,	1,667	8	0	0	0	0	80	0	0	0	0	0	1,747	8	0	
23	Saltpetre,	1,500	0	0	0	0	0	0	0	0	0	0	0	1,500	0	0	
24	Thin Jumboo mat,	1,400	0	0	0	0	0	4,200	0	0	0	0	0	5,600	0	0	
25	Silk thread,	0	0	0	0	0	0	12,000	0	0	0	0	0	12,000	0	0	
26	Cummin seed,	1,375	0	0	3,581	4	0	2,700	0	0	3,250	0	0	10,906	4	0	
27	Bales of silk cloth,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	Onions and Garlic,	1,335	8	0	490	8	0	800	0	0	0	0	0	2,626	0	0	
29	Tamarinds,	6,012	8	0	500	0	0	0	0	0	0	0	0	6,512	8	0	
30	Turmeric,	1,000	0	0	250	0	0	11,750	0	0	0	0	0	13,000	0	0	
31	Iron and Steel,	2,100	0	0	900	0	0	0	0	0	4,536	0	0	7,536	0	0	
32	Gingely oil seed,	2,250	0	0	0	0	0	0	0	0	0	0	0	2,250	0	0	
33	Brass and Copper,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
34	Spun Cotton,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
35	Salt,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36	Hides,	237	8	0	0	0	0	0	0	0	0	0	0	237	8	0	
37	Sugar Candy,	300	0	0	0	0	0	0	0	0	0	0	0	300	0	0	
38	Betel,	100	0	0	100	0	0	0	0	0	0	0	0	200	0	0	
39	Silver lace,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		13,69,866	13	0	63,885	4	0	4,71,769	5	4	1,29,745	0	0	20,35,266	6	4	

Cuddapah,
Collector's Office,
22d September 1854.

(Signed) H. FORBES,
Collector.

(True Copy)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

APPENDIX C.

Bellary, Collector's Office,
30th August 1854.

No. 425.

FROM C. PELLY, ESQUIRE,
Collector of Bellary,

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

In reply to your letter of the 25th instant, No. 121, I have the honor to state that in my opinion a preference should be given to the Bellary and Bangalore line for first execution over the Bellary and Cuddapah line to Madras.

Simply as affecting the direct trade between this District and the Eastern Coast there is not much to choose between the two lines. But as connecting that commerce with Bangalore, Salem, Coimbatore and the Southern Districts, and as connecting the two great Military Stations of Bangalore and Bellary, there can be but little doubt but that the Bangalore line should be selected for first execution.

I have the honor to be, &c.

(Signed) C. PELLY,
Collector.

(True Copy)

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

No. 18.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways, Palmanair.

SIR,

Having completed the survey and levels of the most difficult part of the direct line from Madras to Bellary viâ Cuddapah, viz., that portion lying between Balapilly and Cuddapah itself, and being satisfied, after a careful examination, of the facilities that the remainder offers for the construction of a Railway, I have now the honor to submit my Report on the general nature of the line throughout.

2. The two districts of Bellary and Cuddapah, comprised under the general head of the Balaghaut Ceded Districts, consist for the most part of level plains supported in the nature of a terrace by a regular wall of mountains, and it becomes therefore necessary to seize the most favorable ghaut, or opening, in these mountains in order to be able to accomplish the ascent at all.

3. By a glance at the map it will be seen that Cuddapah, the Southernmost of the 2 Districts, is confined on its Eastern side by a lofty range—the Vencatagherry Hills—which running nearly due North extend unbroken to the Penn Ar (and are thence continued), and on its South, and South Western, side by the boundary hills of North Arcot; while an intermediate range, commencing with the Tripetty Hills, running in a North Westerly direction, divides the high land of Raichotee and Poolavendla, in the Southern portion of the District, from the low villages of Chittvail, Sidhout, Cuddapah, and Camulapoor.

4. The juncture of this intermediate, with the Eastern, range is effected a little to the North of Tripetty by a bar of low hills, on whose lowest saddle occurs the Balapilly Pass—a Pass situated at in every way the most convenient point of ascent, and whose top is but 120 feet above its steepest foot, but unfortunately of such an abrupt form that, though feasible, it offers no great facilities for the construction of a Railway line.

5. To enter the Chittvail valley at any point midway in the Vencatigherry range is not possible. I have examined all the passes in that range and find that the summit of the Raypoor ghaut—the lowest saddle to be thus procured—is 750 feet above its highest (Cuddapah) foot, and 1,350 feet above the level of the sea—such heights being out of the question.

6. The Passes to the South and South-west lead, as has already been described, to a higher level of country altogether, which would more than double the difficulty; as in order to reach Cuddapah by this route it would be necessary to descend as well as to ascend.

7. The remaining alternative is to run up the Nellore District, by skirting the Western foot of the Vencatigherry chain of Hills up to the Penn Ar, and to enter the Cuddapah District by following up the right bank of that river; but I consider that project is not to be recommended. I have run no levels on the Nellore side, but a careful inspection of the Penn Ar has shown me that throughout the Sidhout Talook, it has its course in a succession of defiles, causing a great number of very awkward turns as it winds round the bases of continuous hills; added to all which the extra length that would thus be incurred is of itself nearly sufficient to settle the ineligibility of this line; for taking the two points Kircumbady and Peerzodpett (7 miles to the N. W. of Cuddapah) the distance by this line would be 110 miles, while that by Balapilly would be but 84 miles, or one quarter less.

8. I have on a former* occasion informed you of the deceptive idea the map gives of the country on the right bank of the Penn Ar about Cuddapah; instead of there being any kind of plain, as would be supposed from the white surface exhibited on the map, there exists a range of low hills, uninterrupted from the Bakrapet peak to the debouching of the Boogoo River into the Penn Ar, immediately to the south of the Diamond mines. For this reason I have supposed in the above calculation that the river would be followed up to the Diamond mines; to do otherwise could scarcely be recommended as the lowest saddle of the range, the bandy Canvai, has an ascent of 120 feet—the height of the Balapilly Pass—which we have gone all this way round to avoid.

* In Report dated 12th September 1853.

B

9. After a careful consideration of all the above I have come to the conclusion that the Balapilly Pass is undoubtedly that by which the Railway from Madras should enter the Cuddapah District.

10. The great object in passing through the District of Cuddapah, in addition to the opening out of a District of such value but so long shut up, is to procure a direct line from Madras to Bellary and Bombay, a measure in a political point of view apparently of the first importance.

11. Were it not for this consideration a question might fairly arise as to whether a line from Bellary to the Coast should go to Madras at all; whether it would not be better to seek out some line which, by cutting right through the three great cotton producing Talooks of Cuddapah (viz. the Jummulmudgoo, Koilgoontla and Dhoor Talooks), which the present line does not, should go direct to the Coast, carrying that produce on whose cheap transit the extension of its cultivation so much depends; such a line, as I have already brought to your notice,* is to be found with the singular advantage too of its not crossing any one of the four immense rivers that are met by the Madras line, the Chey Air, Perpugny, Chittravutty and Penn Ar.

* In Report dated 24th August 1854.

12. This line would run from Bellary to Gooty and Royalcheroo, would pass Yadakee, ascend the Bogasmoodrum Pass, traverse the alluvial plain to Nundiallampett, cross the high ground about Hotcomudgoo, and run past Budvail up the Doorenalla Pass, over which it would descend into the Nellore District, having its terminus on the left bank of the Penn Ar at the sea coast. The portion of the line in the Ceded Districts passes for nearly its entire length over one immense waving sheet of black alluvial soil, peculiarly favorable for the construction of a line of Railway; that in the Nellore District is, I am informed for I have not examined it, equally favorable, while the two Passes above mentioned do not offer great obstacles, certainly not greater than what occur on the line selected.

13. I may add that there already exists a considerable traffic along a portion of this line in cotton, which is brought from the Adhony Talook to Podatoor, the Cusbah of the Dhoor Talook, and one of the most important towns in the District.

14. The great disadvantage however that the line in question labors under, and which is quite sufficient to throw over the whole scheme, is that it leads to no Port of importance, i. e. of present importance whatever it may become hereafter, and therefore, unless measures be taken, simultaneously with the construction of the Railway, to improve the port sufficiently for all required purposes, the line, however desirable in itself, cannot well be recommended for adoption.

15. Commencing from Madras the country towards Balapilly lies very level as far as Moosulpaird, after which it becomes rugged but appears to offer no difficulties that cannot be easily overcome; the line from Balapilly to Cuddapah is described in detail below, with reference to the plan and Section enclosed. From Cuddapah towards Bellary the line crosses a sandy plain to the Perpugny River, which is nearly half a mile wide, then runs over a similar plain till the ascent over a rocky red soil at Nerlaconapully occurs, descending from which, through Shethwarpully, the Chittravutty is met, with a width also of nearly half a mile, and is succeeded by a level plain of black alluvial soil up to the Penn Ar at Tadputree, where that river is of a like width, namely half a mile. For about 5 miles beyond this the country lies very level—a sandy waste—succeeded by an ascent to Royalcheroo, whence the line proceeds direct to Jackulcheroo, but has to make a considerable sweep from that place, over rough rocky ground, in circling round the Gooty Rock, and falls into the present high road at the East end of the Yerra Timraj Tank, from which a nearly direct line over a black alluvial soil may be run into Bellary—the Hugry, or Vedavutty, of 1,000 yards width, having to be crossed in the interin.

16. The first two of these rivers, the Perpugny and Chittravutty, have their sources near that of the Penn Ar, into which, as does the Chey Air described below, they eventually flow; these three rivers where crossed are of a very similar nature to the Penn Ar, which has thus been described.

17. * "The Penn Ar River rises among the Nundy Droog Hills in Mysore, where on "account of its Northerly course it is called Uttara Pinakani. It receives a great part of its "waters from the Penna Conda Hills, after which it winds with a very shallow bed towards

* Hamilton.

" the Gandicotta Hills, passing through a very narrow break in them. It then proceeds to the
" Eastern ranges, which it enters about 5 miles above Cuddapah, from whence it flows through
" the Nellore District into the Sea. The channel is generally sandy, but also rocky in many
" parts to the East and West of Gundi Cotta. In the hot season, when the stream is very low,
" the water is brackish with a taste of lime; and throughout Cuddapah it is usually so shallow,
" that there are few days it is not fordable." To this I may add that where crossed at Tadputree its bed, which consists for a great depth of sand alone, becomes during a freshet a quicksand, and the river has acquired there, I am told, the name of Pinnika Penn Ar (or Deadman's Pennar) in consequence of the number of people that have been engulphed in the treacherous sand, while attempting to cross the stream, and that too when scarcely waist deep.

18. To build a bridge over a river of this kind will be in itself no mean undertaking, i. e. without reference to the three others required for the similar rivers above mentioned, while to leave all these unbridged would in a measure do away with the great use of the Railway, as it is these rivers, with their sandy approaches for miles on either side, which are at present the great hindrance to the bandy traffic.

19. The 5th River to be crossed, namely the Hugry, or Vedavutty, has its source in the Baba Boodun Hills in Mysore, but not being subjected to the full influence of the Mooroonad monsoon, it does not generally contain water for longer periods than do the four rivers just alluded to. It runs in a North Easterly direction for a distance of about 240 miles, and falls into the Toongabudra about 40 miles due North of Bellary. It has the advantage over the other four rivers in offering a better foundation for a bridge; the depth of sand in this river where met not exceeding 3 feet, which is succeeded by clay, and below that Kunkur.

20. The present roads of Cuddapah are notoriously bad, the following are among the remarks that have been made at times regarding them. * "The state of the roads in the Cuddapah
" District is execrable, the most important line from Bellary passing through the town of Cuddapah
" to Madras (which is the Tappal road from Bombay to Madras) is allowed to be the very worst
" in the Presidency." " When treasure parties are sent by this road to the Presidency, 10 per
" cent of the bandies break down daily." " In the Cuddapah District nothing has ever been
" done to the roads beyond marking out the Madras and Cuddapah line by an avenue of trees,
" which was done when Sir Thomas Munro was Collector (about 50 years ago.") It should be added that this road has been improved of late, but as yet to no great extent. A peculiar description of cart, with a wooden axle, and narrow solid wheels neatly turned and shod with iron one inch thick, is in use in this part of the District; these carts pick their way without detriment over the roughest country, which would very soon destroy any ordinary Madras bandy.

21. On the road from Cuddapah to Bellary nothing has till very lately ever been done, save the marking out of an avenue of trees by Sir T. Munro simultaneously with that from Cuddapah to Madras. As the greater portion of this line traverses a black cotton soil the road is always heavy in dry, and almost impassable in wet, weather. The Bellary and Cuddapah Famine Roads now in construction include this line, which when completed will assuredly be a vast benefit to both these important Districts; but as it is not in contemplation to bridge the line, the rivers remain, as they have been always both in wet and dry weather, the grand obstacles to bandy traffic.

22. Under these circumstances the advantages that may be calculated to accrue to these Districts by the formation of a Railroad cannot well be exaggerated; the import and export of the two Districts from and to Madras, for the year 1842-43, are given in a statement attached, and there can be no doubt that a line of Railway would double, if not quadruple, the trade in a short period.

Appendix I.

23. Nothing, I consider, shews more completely the effect of bad communications for a length of years than the town of Cuddapah itself. Every one who has not visited that place most probably imagines it a fine flourishing city, which, being near Madras, a zillah station, and the Head Quarters for years of, at least, one Native Infantry Regiment, must necessarily show symptoms of life and progress. But such an idea is lamentably far from the fact, for, save the very necessaries of life, scarcely anything is obtainable, while the same native suspicion that

* Public Works Commission—1st Report.

exists in every small Indian village of every thing and every one, that makes the people bury their money and jewels, and that makes a wealthy man wear a dirty old cloth and affect poverty. from the fear of being robbed, obtains in a great measure here.

24. Cuddapah is said to derive its name from "Kirpa," the Sanscrit for mercy, and that the name was once so called is borne out by the fact of the indigo of the District being known in the English market under the general head "Kurpahs." How the name got changed into Cuddapah does not appear; while, on the contrary, many derive it from the Telugu word "Cuddapah," which means a "threshold," for they say Cuddapah is the threshold of the Ceded Districts.

25. The town of Cuddapah is long and straggling, the bazaar is large and well supplied with the usual requirements of a poor Native population; there are no fine houses, and scarcely one with an upper story. One half of the population consists of Mussulmans, the occupation of whose life, with the exception of those employed as Peons, appears to be the rearing of larks, Mynahs, and Paroquets. All trade save that carried on by the merchant class, which certainly is of very great extent, appears to be in a state of stagnation. The weavers as a caste have entirely deserted their trade, on account of the small encouragement they receive not enabling them to compete with the cheap goods of the English market. The beautiful cloths that were made in the "Moghulai" time are now never seen, while long cloths cannot be made up for less than double the price of the English superior article. All artizans are very scarce; a tolerably good carpenter, tailor, shoemaker, smith, whether in iron copper or brass, is most difficult to be obtained.

26. The manufactures, agricultural produce, chief Imports and Exports of the Bellary District have already been laid before Government by you with Mr. Pelly's Report,* I shall therefore not enter into the subject further than to quote the following, as it appears of much importance, from the Report: "Cotton is the great "staple produce of the Bellary District. A railroad the whole distance into the heart of the "country would probably command the whole traffic in cotton, but not unless the rail would "convey it at a price equally low as at present. The quantity of cotton exported from this "District, which could be increased to demand, is not known; it may perhaps amount to about "8,000 candies. The railroad would probably effect a change in the sea salt expenditure in this "District. Earth salt manufactured in the district is universally used, many attempts have been "made to introduce the sea salt; but the great distance from the coast, and the expense of hire, "has hitherto quite rendered the attempts abortive. But a railroad could probably bring sea "salt in such abundance, at such a cheap rate, as to enable the people to purchase it at a price "not exorbitantly above the price of earth salt; and could that be effected, there would be in "the course of time a consumption of sea salt from 5 to 10 times the amount now consumed." This is afterwards stated as averaging annually 100 garce; the Depot price of which is Rupees 120, and retail price Rupees 238-8-0, or nearly double.

* Dated 28th Feb. 1851.

27. Regarding the resources of the Bellary District, as touching their facilitating the construction of the line, it may be asserted that with the exception of the commonest class of laborers no workmen are to be had. As bridges, and masonry works generally are almost unknown in the District, all maistries, brickmakers, masons, chunam-burners, &c. would have to be instructed ab initio. Coolies, men women and boys, are I believe to be obtained to any amount at the usual Indian rates of pay.

28. Lime-stone is found scattered along the whole length of the line, at very short distances from the surface; and good brick-earth is obtainable on the banks of all the rivers. A massive blue clay slate is found on the Pooshpagherry Hill, 9 miles to the N. W. of Cuddapah, as also scattered over the surface of the country between that and Gooty. It is admirably adapted for stone facings, surface-drains, tunnels, &c. and the natives perfectly understand the use of it, as the houses of the rich merchants at Podatoor, in fact in every village in the vicinity, well testify.

29. For the permanent way, ballast of various kinds is to be procured in abundance, both gravel and sand.

30. Bellary is singularly devoid of timber. Plains of miles in extent are seen without a single tree, scarcely even a bush; there will therefore be a considerable difficulty in procuring

sleepers of wood, the Western Ghauts being the nearest point from which any great supply may be anticipated.

31. The chief export from the Cuddapah District is Indigo, of which in 1842-43, as is shown in the statement annexed, there were sent to Madras 8,000 cwts., valued at 17¾ lakhs of Rupees. The greater portion of this Indigo is grown in the immediate vicinity of Cuddapah, at Ontimitta in the Sidhout Talook, and at several places in the Chittvail valley; the whole of which would be met by the line of Railway under contemplation. The present rate of bandy hire from Cuddapah to Madras may be estimated at 10 Annas the Maund, so that the carriage of the indigo must have cost about Rupees 22,500 in that year, that is have added ⅛th to its cost.

32. The next chief exports are Cotton, Sugar, Rice, Muslins, and Tamarinds, the total value of which is stated to be upwards of 6 lakhs of Rupees.

33. Regarding the resources of the Cuddapah District in connection with the Railway work, laborers can be obtained in great numbers, but, for the same reason as has been stated above with reference to Bellary, no skilled workmen can be found. The soil all along the line South of the town is very firm; it is described in detail below. Lime stone and good brick clay are obtainable in abundance.

34. For the permanent way, ballast of several descriptions, such as gravel, disintegrated granite, and sand, can be procured all along the line in abundance.

35. Timber is to be had for sleepers, but not in very great abundance. From all I can learn, and it is almost impossible to get satisfactory information on this point, about two lakhs only of sleepers, which would suffice for but 100 Miles, may be obtained if whitewood is allowed, i. e. the whitewood surrounding the heart, but if only heart-wood then about one half lakh may be expected. The names of woods which have been reported to me as fit for the purpose, and to be procured, are shown in Appendix H.

36. The Pooshpagherry stone, mentioned in Para 28, will undoubtedly make good sleepers; it is found in great abundance, and worked easily and consequently cheaply. Blocks of this stone 2 feet square and 9 inches thick may be purchased at Pooshpagherry for four Annas, or at Cuddapah for 9 Annas, each stone.

37. Iron is principally manufactured in two places at Yerragoontla Cotta, in the Chittvail Talook, and in the villages of Roodra, Machipullay &c., in the vicinity of Podatoor, the Dhoor Cusbah. The iron from the latter place is preferred by the Natives, as it is softer and more easily worked. In both places there is abundance of ore and brushwood-jungle for charcoal.

38. Yerragoontla Cotta (literally the Red Hill Fort) is near Codoor, and only 3 Miles to the West of the line. It was for some time the residence of the last of the Chittvail Rajahs, the remains of whose palace gives a very deserted appearance to the place.

39. The process of iron-making here (and at Podatoor) is exactly that described in a late number of the *Friend of India* as performed in Bheerbhoom, and is in fact the process followed in every part of India. At this place however the workmen have but little skill; no iron is made (nor at Podatoor) except on order; with the present number of workmen they could, at the rate they work, turn out two and a half maunds, but they rarely do one fourth of that quantity, of pig iron annually at a cost of Rupees 120 per ton. But little assistance can be expected under present circumstances from these works except in the repairs of tools. A Momaty of their manufacture is far from ornamental and of but little use, and as for Pickaxes the workmen informed me that they could not make the hole in the centre of the pick without splitting it.

40. Steel is made in only two places, both bearing the same name Chintalcheroo (literally the Tamarind Tank) the one near Budvail, which gives the best steel, the other near Podatoor above mentioned; but in neither is the quantity manufactured considerable.

41. Regarding fuel—I have made frequent enquiries, but I regret ineffectually, regarding the existence of coal or of anything that might lead to its discovery. The timber available for charcoal is so small in amount that it is impossible to rely on it for fuel. Coal will undoubtedly have to be used, but whether from Burdwan, England, or elsewhere, is a matter that has I believe yet to be settled. As I am aware that the serious attention of all connected with the Indian

Railways is centered on this point, I shall not enter here into any speculative remarks on the subject.

42. Regarding the traffic that may be expected on this line of Railway, it is not easy to form any estimate. The statements of traffic that were prepared for me, by order of the Collector of Cuddapah, during two months, bore such internal evidences of being incorrect that I have not thought it worth while to append them. Even if they were correct they would afford but a very small idea, considering the nature of existing communications, of the eventual traffic.

43. I have not entered into any remarks concerning the construction of the permanent way, i. e. regarding the weight of engines, chairs &c., description of rail to be recommended, the mode of fixing, length of bearing &c. &c., as it does not appear to me that there is any peculiar necessity, arising from the nature of the gradients, for deviating from the patterns already selected for the S. Western line at present under construction; but on the contrary that it would be as well to assimilate all as much as possible.

44. The estimate of the probable cost of constructing a single line of Railway from Madras to Bellary is shown in the attached Abstract Statements, the details of which appear in Appendices B, C, D, E, F, & G.

45. The total length of the line, commencing from Avady, the point at which I understand this line will leave that from Madras, to the Western coast, is 283¼ miles.

46. The amount of estimate, excluding rolling stock, water tanks, switches, turn-tables, and so forth, is Rupees 163,06,212, being at the rate of about Rupees 57,543 per mile.

47. As a distance of 70 miles, 2 furlongs, 197 yards, has been surveyed and levelled, I have been enabled to draw up a tolerably accurate estimate for this portion; the estimate for the remaining 213 miles has been in great part calculated at the average number of Cubic yards per mile that this estimate gives, where the country traversed has the same general appearance.

48. I have divided the latter distance into five distinct portions (see Appendix F.) thus:—

No. 1, includes from Awady to Bungalum, the first 24 miles. For this I have allowed for earthwork in embankments and cuttings 40,000 cubic yards per mile; the average deduced from the Railway Chief Engineer's Estimate for the S. Western line now under construction over a very similar country.

No. 2, is from Bungalum to Ballapilly, a distance of 52 miles. This portion being more difficult I have allowed a higher rate, 2 annas, per cubic yard, together with the number of cubic yards (50,000) I found to be required in the similar country beyond Balapilly.

No. 3 is from Cuddapah to Royalcheroo, 75 miles in length, and passing over an easy country it may be safely estimated at the rate of No. 1.

No. 4, 30 miles long, comprises all the rough, rocky, ground on both sides of Gooty, and has therefore been allowed the increased rate of No. 2.

No. 5, or remaining 32 miles, traverses fine open plains, and may be safely reckoned not to require a higher rate than that of No. 1.

49. In preparing the Estimate for the line surveyed and levelled, the whole distance was divided into 5 portions, in accordance with its general features. Each mile of these portions was calculated separately, i. e. the average height of embankment, or depth of cutting, required in each being ascertained, a rate was allowed in consideration of such height, or depth, and the nature of the soil throughout the mile; the average of the cubical contents and rates thus given in each portion being taken as the average of that portion.

50. The first portion, 8 miles in length, commencing from the permanent mark in the Cantonment of Cuddapah, lies for a distance of 6 miles over a very easy country, the steepest of whose 4 gradients* is 1 in 400; but for its remaining distance over the rough, but not difficult to be worked, ground in the approach to the Canamalopully pass, when a gradient of 1 in 173 followed by one of 1 in 95 occurs.

* Detailed in Appendix A.

51. The 2d portion, extending for a length of 22 miles, includes the ascent and descent of the Canamolopully pass, and the rocky ground near Muntapampully. On this portion some very severe work will be encountered, as the soil throughout is firm, strong, and rocky, while

deep cuttings and steep embankments become necessary. The Pass is ascended at a gradient of 1 in 85, which is followed by a descent, nearly 3½ miles long, of 1 in 108; during the remainder of this portion, i. e. in the ten remaining planes, there is no steeper gradient than 1 in 147.

52. The 3d Division is 27 miles long, it commences near the left bank of the Chey Air, and extends over a gradually ascending country, that requires no steep gradients, to the high ground in the vicinity of Codoor. The Chey Air where crossed presents a width of 1,100 yards; its bed is of sand continued to a considerable depth, and it offers but little facilities for the construction of a bridge. This division is divided into 22 planes, the steepest gradient being 1 in 140; this occurs at the ascent from the cultivated land below, to the bed of the Corlacoonta tank, and is only 1 mile long. The steepest of the remaining gradients is 1 in 225. No severe cuttings and embankments occur in this portion, and the soil throughout is firm but not difficult to be worked.

53. The 4th Division, 9½ miles in length, includes all the undulating and gradually ascending country between Codoor and the head of the Balapilly Pass. The portion is divided into 9 planes, one of which, viz., that at the Ghaut's summit, is level, the steepest gradient being 1 in 112. The Section shows a greater rise than will I think eventually be found necessary, but as the last 7½ miles of this division passes through a dense jungle of brushwood and small trees, the cutting through which was a laborious business, I did not think it advisable to devote so much time, as must necessarily have elapsed, in seeking for and opening out the best line, considering that that levelled presented no great difficulties.

54. The 5th portion, 3 miles 7 furlongs in length, is the descent of the Balapilly pass, a descent of 147 feet. In my report to you, dated the 16th June 1854, I have entered into a detailed description of the nature of the pass, and have pointed out the impossibility of securing without sharp curves any favourable line along it. The plan, of the line selected, shows a large *S* curve, consisting of 4 curves (the minimum radius of which is ½ mile) flanked and divided by 3 straight portions; while the section shows 6 plains, in which the steepest gradient is 1 in 103, occurring on two of the above mentioned straight portions.

No. 10, Dated 4th May 1854.
No. 11, do. 8th May „
No. 12, do. 20th May „
No. 13, do. 10th June „
No. 15, do. 14th July „
No. 16, do. 7th August „

55. As I have already furnished you in my Reports as per Margin with a detailed account of every portion of the country I surveyed an levelled, as to its features, soil and cultivation; and with a description o every village met as regards the number of its inhabitants, the Revenu they furnish and so forth, I have not thought it necessary in the abov Paras, to enter at greater length into the subject. I may mention, however, that it appears fron these Reports that the average land Revenue collected, in the villages along this portion of th line surveyed, appears to be at the rate of 2 Rupees per head, i. e. including men, women, an children.

56. The 7 principal rivers met on this portion of the line, and estimated for in appendix C. have been severally described in the Reports alluded to in the foregoing Para; while the 5 larg rivers included in appendix G. have been reported on by me in my letters to you noted in the mar gin. I have estimated for these 12 Rivers at the average rate of Rupee 50 per running foot, as I consider that that rate will suffice, though no more than sufficient, to bridge them.

* No. 3, Dated 27th Sept. 1853.
No. 4, do. 23d October 1853.

57. For the small bridges, culverts, and drains, for metalling of Roads, and earthwork i Road approaches, for fencing and gates, all which items are included in appendix D., I hav taken an average rate deduced from the estimate, prepared by the Railway Chief Engineer, fo the first 60 miles of Railroad from Madras towards the Western coast.

58. The estimate for the Permanent way (see appendix E.) has been prepared much in th same manner. I have allowed for Rails of 70 lbs. to the yard, and for wrought iron at £12, an cast iron at £9, per ton.

59. The remainder of the Estimate consists of the cost of Buildings and stations, taken a an average rate of Rupees 2,500 per mile; of superintendence at 10 per cent; and for contingen cies at a like rate.

60. As the land through which the line passes is the property of Government, its value has not been included in the estimate attached; the following statement shows the extent of each desciption of land met on the portion surveyed:

Tary or Wet land	7,350 yards.
Bagayat or Garden	7,854 do.
Khooshky or dry Cultivation	23,561 do.
Waste	85,072 do.

Assuming 50 yards as the average breadth of land required, the superficial extent of land of each kind taken for the work would be as follows.

Wet (Tary)	75.930 Acres.
Garden (Bagayat)	81.136 do.
Dry (Khooshky)	243.9 do.
Waste	878.843 do.

The estimated full value of the above, i. e. including the absolute value of the land, or tenant right, with the Government claim upon it, would be about as follows:

Nature of land.	*Rate.*	*Total value.*
Tary, per Acre	150 Rs.	Rs. 11,389
Bagayat, per Do.	150 Rs.	Rs. 12,170
Khooshky, per Do.	50 Rs.	Rs. 12,195
Waste	,,	,,
	Total value of land	Rs. 35,754

Or about 508 Rupees per mile, i. e.

Total value of land for 283⅜ miles, from Avady to Bellary Rs. 1,43,955

61. Before concluding this report I think it necessary to add a few remarks regarding the advisability, in a political point of view, of connecting by Railway Bangalore with Bellary in the first instance, and leaving the direct line from the latter place through Cuddapah to Madras, as a subject for future consideration. You have already brought * to the notice of Government the great importance of the objects to be obtained by such a measure, and I therefore now will confine myself to noticing the relative difficulties and advantages offered in the construction of each line.

* Report dated 30th July 1851.

62. Undoubtedly the main object to be held in view in the construction of a Railway is that, whatever direction may be taken, Bellary should be connected with Madras as speedily as possible. The branch line to Bangalore from Vaniambady having already been sanctioned, there will remain, on its completion but 160 Miles to connect that place with Bellary, i. e. that this line is 123 Miles shorter in length than that from Madras viâ Cuddapah to Bellary, or in other words that 123 Miles less of actual Railway will require to be constructed. Considering the present price of iron, and the existing high freights, it appears quite unnecessary to mention the enormous advantages such a consideration must carry, both in cost and speed of construction.

63. The objection that may be urged of the inexpediency of ascending a height of 3,000 feet to Bangalore, in order to descend 1,600 feet (the height of Bellary being 1,400 feet above the Sea) cannot hold good, as whatever the direction of the line from Madras to Bellary, that from Madras to Bangalore will be completed (and for the matter of that it most assuredly will have to be eventually continued to Bellary even should the Cuddapah line be constructed); and therefore considering Bangalore as a fixed point on the Railway, it only remains to notice the nature of the 160 Miles to be traversed to Bellary, as compared with a like distance on that from Madras through Cuddapah.

64. Having lately inspected the former line in your Company, I believe I am not in error in stating that you considered the whole of it as remarkably favorable for the formation of a Railway, that the only difficulty encountered was the Pass from the Bellary plain up to the high ground in the vicinity of Nundy Droog, but that this Pass in addition to its being free from fever—no light consideration—presented no such difficulties as that at Balapilly on the Cuddapah line.

65. It is also to be remarked that no high ground, like that at the Canamalopully Pass near Cuddapah, would be here encountered, that only one (viz. the Hugry), and that the most favorable one of the five large Rivers crossed by the Cuddapah line, would be met on this line, and that the section of the Hugry River is considerably smaller at the point where the Bangalore line would cross it, than it is 25 Miles lower down; so that the expense of bridging it would be considerably diminished.

66. In conclusion, as it may appear to you that the time I have allowed to transpire in completing the work required at my hands is somewhat considerable, and perhaps not indispensably necessary, I consider it but due to myself to call your attention to the following statement:

The Minutes of Consultation, deputing me to the survey of the Cuddapah line, are dated 22d March 1853, but as they direct my being placed under your orders "so soon as the present "working season at the ghaut is over," and as this did not occur till the 21st June 1853, I was not able to leave the Munzerabad Ghaut before that date.

Having proceeded to Madras, a march of 350 Miles, and completed all arrangements for my new Office Establishment, I commenced my preliminary inspection of the line on the 2d August following.

The Surveyor, Mr. Stoddard, originally placed under my orders, reported sick immediately after receiving instruction to join me, and consequently I never saw him. He was replaced by another Surveyor, Mr. Blacker, who, being employed in Rajahmundry at the time, did not join me until after I had completed my inspection of the whole line (along which I took Aneroid observations at every Mile) and of the country beyond Bellary as far as Copul, and had returned to Cuddapah; a total march of 570 Miles.

Mr. Blacker worked with me from the 19th of October to the 12th November, i. e. for about 3 weeks only, when he went on the sick list; and continuing sick for two months, was ordered by the Doctor to proceed to Madras for the benefit of his health. He was succeeded by Mr. Ross who joined me in the early part of March last. During the 4 months I was thus without a Surveyor I employed myself in examining all the Passes* in the Vencatigherry Range of Hills, in laying out and levelling the line between Cuddapah and Ontimitta, and inspecting the Doorenall† Pass.

* See Report No. 6 Dated 22d Dec. 1853.

† See Report No. 8 Dated 20th March 1854.

I then returned to the staking out and levelling of the line south of Ontimitta, and to the tracing out of the Ballapilly Pass, and was thus occupied till the middle of June, when taking advantage of the arrival of a 2d Surveyor, Mr. Downes, who joined my camp on the 4th of that month, I proceeded to inspect the line of the country lying to the Eastward of the Doorenalla Pass, in the direction of Yadakee and Gooty.

In consequence of a sharp attack of fever, when thus employed, I was unable to complete my inspection, as I have detailed in my Report on the subject dated 24th August 1854, until I had the opportunity of doing so in your Company on the 6th of that month, on our way up from Ballapilly, from which place we have together inspected the whole line to Bellary, as also the line of country from that place to Bangalore. I have in the course of my inspection of the country now reported on, travelled over a distance of about 1,800 miles, which, as you are aware, is in itself a journey occupying, owing to the imperfect means of locomotion at present existing, no inconsiderable length of time.

67. I was anxious to have transmitted with this report the fair plan and section of the portion of the line surveyed and levelled, but as these are not yet quite ready I have thought it better to submit the report at once; and I hope to forward the drawings in a few days. I had also intended to attach a section of the present road between Kircumbady and Balapilly, in order to give some idea of the general levels of the country there crossed, but Mr. Downes, who was deputed to that work, has been for the greater part of the past month on the sick report, at Cuddapah, and the section is not yet completed; this however is not of so much importance, for, as you are aware, nothing serious occurs on that portion of the line.

I have the honor to be, Sir,

Your most obedient servant,

Palmanair, 1st October 1854.

RICHARD A. ROBERTS, Lieut.,
Engineers.

APPENDIX A.

Table of Planes between Cuddapah and Balapilly of the proposed line of Railroad from Madras to Bellary via Cuddapah.

No. of Planes.	Length.			Inclination.		Remarks.
	Miles.	Feet.	Yards.	Rise.	Fall.	
1	1	0	110			From the Permanent mark in Cantonment of Cuddapah.
2	2	0	110	1 in 495	,,	
3	1	7	165	,,	1 in 4,110	
4	0	6	9	1 in 400	,,	No. 1 Portion.
5	0	3	206	1 in 173	,,	
6	1	3	0	1 in 95	,,	
7	1	6	76	1 in 85	,,	
8	3	3	157	,,	1 in 108	
9	1	3	95	,,	1 in 224	
10	1	4	79	,,	1 in 453	
11	1	6	110	,,	1 in 2,734	
12	1	1	110	,,	1 in 380	
13	1	0	110	1 in 1,603	,,	No. 2 Portion.
14	1	5	0	1 in 410	,,	
15	1	6	110	1 in 490	,,	
16	1	3	163	1 in 277	,,	
17	1	6	70	1 in 178	,,	
18	1	5	91	,,	1 in 147	
19	1	3	25			
20	1	5	95	,,	1 in 1,833	
21	1	7	110	,,	1 in 1,460	
22	1	2	110	,,	1 in 860	
23	1	1	200	1 in 725	,,	
24	1	1	20	1 in 350	,,	
25	1	5	0	1 in 1,070	,,	
26	1	4	0	1 in 428	,,	
27	0	7	110	1 in 260	,,	
28	1	0	110	1 in 380	,,	
29	1	6	110	1 in 510	,,	
30	0	7	110	1 in 330	,,	
31	1	1	110	1 in 550	,,	No. 3 Portion.
32	1	0	0	1 in 140	,,	
33	0	7	110	1 in 1,650	,,	
34	0	7	110	1 in 370	,,	
35	1	0	0	1 in 440	,,	
36	1	1	110	1 in 525	,,	
37	1	0	110	,,	1 in 1,870	
38	1	1	110	1 in 4,180	,,	
39	1	1	0		1 in 594	
40	1	2	0	1 in 600	,,	
41	0	7	110	1 in 225	,,	
42	1	0	0	1 in 660	,,	
43	1	0	0	1 in 590	,,	
44	2	1	0	1 in 330	,,	
45	1	0	0	1 in 2,640	,,	
46	1	0	0	1 in 422	,,	No. 4 Portion.
47	0	7	110	1 in 275	,,	
48	1	0	110	1 in 112	,,	
49	0	6	0	1 in 360	,,	
50	0	6	0	,,	,,	
51	0	7	145	,,	1 in 148	Head of the Balapilly Pass.
52	0	6	76	,,	1 in 131	
53	0	2	160	,,	1 in 256	No. 5 Portion.
54	0	2	149	,,	1 in 103	
55	0	5	0	,,	1 in 220	
56	0	6	157	,,	1 in 103	
	70	2	197			

RICHARD A. ROBERTS, LIEUT.,
Engineers.

APPENDIX B.

Estimate of the probable cost of Earthwork in Embankments and Cuttings between Cuddapah and Balapilly, on the proposed line of Railway from Madras to Bellary.

Portion.	No. of Miles.	Average No. of Cubic yards per Mile.	Total Cubic yards.	Rate.	Amount.	Remarks.
					Rupees.	
1	8	40,600	3,24,800	@ 1½ As. per Cubic yard.	30,450	
2	22	74,336	1,635,392	@ 3 As. do.	306,636	Through the Canamalopully Pass, &c.
3	27	35,979	9,71,428	@ 1½ As. do.	91,071	
4	9½	32,730	3,10,932	@ 2 As. do.	38,867	
5	3⅞	66,342	2,57,075	@ 4 As. do.	64,269	Balapilly Pass.
Total..	70⅜			Total Rs...	5,31,293	

RICHARD A. ROBERTS, Lieut.,
Engineers.

APPENDIX C.

Estimate of the probable cost of Bridging the undermentioned principal Rivers met between Cuddapah and Balapilly, on the proposed line of Railroad from Madras to Bellary.

No.	Name of River.	Width.	Rate.	Amount.	Distance from Permanent mark in Cantonment.		
			Rupees.	Rupees.	Mile.	Feet.	Yards.
1	Rala River........	113 yards.	50 per running foot.	19,950	0	5	180
2	Booga do........	200 do.	do.	30,000	3	1	116
3	Bakrapett do........	140 do.	do.	21,000	12	7	17
4	Chey Air do........	1,100 do.	do.	66,000	29	7	110
5	Poolung do........	100 do.	do.	15,000	42	7	161
6	Goondla do........	100 do.	do.	15,000	52	7	40
7	Tripetty do......	180 do.	do.	27,000	58	7	127
			Total Rupees...	1,93,950			

RICHARD A. ROBERTS, Lieut.,
Engineers.

APPENDIX D.

Estimate of the probable cost per Mile of the undermentioned works on the proposed line of Railroad from Madras to Bellary, as deduced from the average Estimate of the first 60 Miles of Railroad from Madras towards the Western Coast.

Nature of Work.	Total for one Mile.	Total for 70⅛ Miles.	Total for 213 Miles.
	Rupees.	Rupees.	Rupees.
Bridges, Culverts and Drains....................	3,000	211,500	6,39,000
Metalling for Roads and Earthwork in Road approaches..................................	250	17,625	53,250
Fencing..	300	21,150	63,900
Gates..	250	17,625	53,250
Total Rupees...	3,800	2,67,900	8,09,400

RICHARD A. ROBERTS, Lieut.,
Engineers.

APPENDIX E.

Estimate of the probable cost of laying the permanent way including sidings for a single line of Railway from Madras to Bellary. Per mile.

			Rupees.	Rupees.
	Rails 70lb. to the yard........			
	Wrought iron rails 118·9 tons Do. for sidings 12·0 do.	130·9 tons @ £ 12................	15,708	
	Chairs.............. 40·6 do. Do. for sidings 4·4 do.	45·0 tons @ £ 9................	4,050	
	Fishing plates...... 8·8 do. Do. for sidings 0·9 do.	9·7 tons @ £ 12................	1,164	
	Bolts................ 1·5 do. Do. for sidings 0·15 do.	1·65 tons @ £ 12................	198	
1937	Sleepers each 10 feet × 10 inches × 5 inches @ 3 Rs. per sleeper.		5,811	
4700	Cubic yards of Ballast @ 1 Rupee per cubic yard..................		4,700	
3522	Keys @ 1 Anna each..................		221	
7750	Spikes or Trenails @ 1 Anna each..................		487	
	Laying Rails..................		600	
	Sundries..................		561	
		Total for one mile Rupees...		33,500
		Do. for 70⅛ miles ,, ...		23,51,281
		Do. for 213 miles ,, ...		71,35,500

RICHARD A. ROBERTS, Lieut.,
Engineers.

APPENDIX F.

Estimate of the probable cost of Earthwork in Embankments and Cuttings (not included in Appendix B.) on the proposed line of Railway from Madras to Bellary.

No. of Miles.	Average No. of cubic yards per mile.	Total cubic yards.	Rate per cubic yd.	Amount.	Remarks.
				Rupees.	
24	40,000	9,60,000	@ 1¼ As.	75,000	From Avady to Bungalum.
52	50,000	26,00,000	@ 2 „	3,25,000	From Bungalum to Balapilly.
75	40,000	30,00,000	@ 1¼ „	2,34,375	From Cuddapah to Royalcheroo.
30	50,000	15,00,000	@ 2 „	1,87,500	From Royalcheroo to Goondacul.
32	40,000	12,80,000	@ 1¼ „	1,00,000	From Goondacul to Bellary.
213	43,850	93,40,000	1 A. 7 P.	9,21,875	

RICHARD A. ROBERTS, Lieut.,
Engineers.

APPENDIX G.

Estimate of the probable cost of Bridging the undermentioned principal Rivers (not included in Appendix C.) met on the proposed line of Railroad from Madras to Bellary.

No.	Name of River.	Width.	Rate.	Amount.
			Rupees.	Rupees.
1	Soornamookey River......................	200 Yards.	50 per running Foot....	30,000
2	Perpugny, Do.	820 do.	do.	123,000
3	Chittravutty, Do.	810 do.	do.	121,500
4	Penn Ar, Do.	800 do.	do.	120,000
5	Hugry, or Vedavutty Do.	1,000 do.	do.	150,000
			Total Rupees......	5,44,500

RICHARD A. ROBERTS, Lieut.,
Engineers.

No. 1.

Abstract Statement of the probable cost of constructing a single line of Railway between Cuddapah and Balapilly.

Nature of Work.	Amount.	Remarks.
Earthwork, Embankment and Cutting	5,31,293	Appendix B.
Bridging 7 principal Rivers	1,93,950	Appendix C.
Small Bridges, Culverts and Drains	2,11,500	Appendix D.
Metalling for Roads and Earthwork in Road approaches	17,625	Appendix D.
Fencing and Gates	41,775	Appendix D.
Permanent way	23,57,562	Appendix E.
Buildings and Stations	1,76,250	
Superintendence at 10 per cent	3,52,995	
Contingencies at 10 per cent	3,88,295	
Total	42,71,245	

No. 2.

Abstract Statement of the probable cost of Constructing a single line of Railway from Madras to Bellary, not including the portion between Cuddapah and Balapilly.

Nature of Work.	Amount.	Remarks.
	Rupees.	
Earthwork in Embankments and Cuttings	9,21,875	Appendix F.
Bridging 5 principal Rivers	5,44,500	Appendix G.
Small Bridges, Culverts and Drains	6,39,000	Appendix D.
Metalling for Roads, and Earthwork in Road approaches	53,250	Appendix D.
Fencing and Gates	1,17,150	Appendix D.
Permanent way	71,35,500	Appendix E.
Building and Stations	5,32,500	
Superintendence at 10 per cent	9,94,377	
Contingencies at 10 per cent	10,93,815	
Total	120,34,967	
Total of Abstract Statement No. 1	42,71,445	
Grand Total Rupees		163,06,212-0-0

or about Rupees 57,543 per Mile.

APPENDIX H.

List of woods fitted for sleepers to be procured in the District of Cuddapah.

Telugu Name.	Botanical Name.	Remarks.
Sagvan...............	Tectona grandis or Teak.	From the Cumbum and Deepad Talooks scarce and expensive.
Yepi...................	Diospyros Ebenaster (Shorea Robusta ?) Bauhinia. Diphylla.	This tree is denominated the "Shorea Robusta," or Saulwood, in Campbell's Telugu Dictionary. Tamul people call it "Acha Maram," which Dr. Wight states is the D. Ebenaster; this wood however has no similarity whatever to Ebony. It is obtained from the Chittvail Talook, in some quantities principally from the Hills near the villages of Ootaloor and Tippaipully, where there is a regular market for timber of small size. The Yepi furnishes an exceedingly strong and durable wood.
Shandanum.........	Pterocarpus Santalinus....	This tree furnishes a red dye, the "Red Saunders" of commerce, and is consequently much valued; the wood is hard and very durable, but not obtainable in any great quantity.
Jittaygy.............	Dalbergia Sessoides (Rose-wood)...........	Not to be proc·red in any great abundance.
Caraka...............	Terminalia Chebula (Gall-nut Tree).......	Firm, sound wood, but not abundant.
Billoo.................	Chloroxylon Swietenia (Satin-wood)..........	Do. do.
Tookey...............	Diospyros Melanoxylon (Ebony.)	Do. do.
Dirasana.............	Acacia Odoratissima.......	Do. do.
Vellama..............	Feronia Elephantum (Wood Apple)	Do. do.
Nulla Toomma.....	Acacia Arabica.......	Do. do. This is the "Babool" of Bengal.
Tel Toomma.......	Acacia Leucophlœa........	A good serviceable wood; bark much used for making arrack.
Muddy...............	Terminalia Alata...........	Grows a large tree, and wood is said to be strong.
Inoomuddy....... ...	Terminalia Glabra.........	A wood much admired, but difficult to be obtained in any quantity.
Pala..................	Wrightia Tinctoria........	A very handsome wood, strong, and tolerably durable.
Yegi...................	Pterocarpus Marsapium...	Very scarce.
Nerudy..............	Engenia Caryophyllefolium....................	Grows a tall tree good serviceable wood.

Besides the above a few Mango and Jack trees are obtainable. Good timber is said to be procured from the 3 trees mentioned below, but I have not seen the trees, nor can I ascertain their Botanical names.

1. Pogada, 2. Somi, 3. Zalary.

RICHARD A. ROBERTS, LIEUT.,
Engineers.

APPENDIX I.

Value and Estimated weight of Imports into Madras by land in the year 1842–43 *from the Bellary and Cuddapah Districts.*

Imports.	Bellary.		Cuddapah.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	Rs.	Cwts.	Rs.	Cwts.	Rs.
Coosoomba powder....	136½	3,056	226⅛	5,082	462⅝	8,148
Bengal gram............	391½	1,050	391½	1,050	783	2,100
Condooloo (dholl).....	183½	399	0	0	183½	399
Horse gram.............	4,958½	7,875	4,892½	7,500	9,851	15,375
Rice..........................	19,759	35,550	35,015¾	63,000	54,774¾	98,550
Wheat.......................	750¼	2,925	733	2,855	1,483¼	5,880
Nuts..........................	25	875	220½	8,171	245½	9,046
Cardamums..............	0	0	½	50	½	50
" dry	0	0	2	19	2	19
Cotton.......................	14,183	1,58,850	22,187½	2,48,500	36,370½	4,07,350
Cummin seeds...........	23	447	399¾	7,785	422¾	8,232
Ghee..........................	0	0	213	5,525	213	5,525
Gingely oil seeds.......	3,872	11,287	1,093	3,190	4,967	14,477
Indigo.......................	17½	3,894	7,978¾	17,87,223	7,996¼	17,91,117
Jaggery.....................	0	0	1,612¾	7,769	1,612¾	7,769
Lamp oil seeds..........	16	423	175	4,474	181	4,897
Leather.....................	0	0	15¾	138	15¾	138
Oil Auguttey.............	0	0	145	2,596	145	2,596
" Gingely.............	0	0	258	3,082	258	3,082
" Of sorts............	0	0	0	226	0	226
Opium.......................	0	0	1	576	1	576
" Milk	0	0	17¾	9,218	17¾	9,218
Red wood..................	0	0	1,299⅜	2,057	1,299⅜	2,057
Sandal wood.............	0	0	⅞	21	⅞	21
Saltpetre..................	0	0	260½	2,756	260½	2,756
Silk thread...............	0	0	3¼	1,810	3¼	1,810
Sugar........................	0	0	2,871	72,074	2,871	72,074
Do. Candy..............	0	0	11¾	308	11¾	308
Sundries....................	0	0	0	68	0	68
Tamarind..................	0	0	18,426½	1,25,077	18,426½	1,25,077
Timber (assumed weight)............	0	0	69¼	187	69¼	187
Tobacco.....................	0	0	59	2,076	59	2,076
Candees....................	0	32	0	1,293	0	1,325
Cases........................	0	0	0	10	0	10
Chintz.......................	0	4,484	0	22,703	0	27,187

Value and Estimated weight of Imports into Madras by land in the year 1842-43 from the Bellary and Cuddapah Districts.

Imports.	Bellary.		Cuddapah.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	Rs.	Cwts.	Rs.	Cwts.	Rs.
Cholies	0	252	0	403	0	655
„ Laced	0	80	0	0	0	80
Cloths	0	22,816	0	13,843	0	36,659
„ Laced	0	372	0	1,018	0	1,390
Blue cublies	0	11,793	0	613	0	12,406
Dovetties	0	261	0	4,593	0	4,854
„ Laced	0	0	0	43	0	43
Dutties	0	0	0	896	0	896
Ginghams	0	88	0	0	0	88
Blue Handkerchiefs	0	58	0	0	0	58
Checked „	0	70	0	0	0	70
Red „	0	258	0	31	0	289
„ Kinvary	0	0	0	269	0	269
„ Elephant Jools	0	0	0	2,330	0	2,330
Longies	0	5,584	0	0	0	5,584
Muslins	0	0	0	98,803	0	98,803
Purses	0	0	0	958	0	958
Roomals of sorts	0	120	0	1,240	0	1,360
„ Laced	0	0	0	158	0	158
Sashes	0	49	0	1,439	0	1,488
„ Laced	0	0	0	100	0	100
Soosees	0	8,201	0	299	0	8,500
Silk cloth	0	150	0	204	0	354
„ Coottoonies	0	0	0	109	0	109
„ Keincobs	0	0	0	1,073	0	1,073
Shawls	0	0	0	50	0	50
Towels	0	0	0	12	0	12
Tuppies	0	0	0	37	0	37
Gunnies	0	0	0	21,190	0	21,190
Jamarcolam	0	317	0	185	0	502
Turbands	0	0	0	816	0	816
„ Chintz	0	0	0	11,084	0	11,084
				Grand Total.	Tons. 7,436 $\frac{1}{10}$	28,39,922

RICHARD A. ROBERTS, LIEUT.,
Engineers.

APPENDIX I.

Value and Estimated weight of Exports from Madras by land into Bellary and Cuddapah Districts, in the year 1842–43.

Exports.	Bellary.		Cuddapah.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	Rs.	Cwts.	Rs.	Cwts.	Rs.
Books	...	3,350	...	190	...	3,540
Corks	...	420	...	120	...	540
Cotton thread twist ...	...	13,530	...	50	...	13,580
Musk	...	100	...	320	..	420
Dyes Indigo	96⅞	18,636	...	...	96⅞	18,636
Glass ware	...	1,932	...	4,500	. .	1,932
Carpets	...	150	...	312	. .	462
Palmira	...	34	...	...	...	34
Beer	...	9,749	...	2,611	...	12,350
Brandy	...	5,670	...	1,581	. .	7,251
Sherry	...	240	...	...	...	240
Champagne	...	1,080	...	180	..	1,260
Claret	...	758	...	200	. .	958
Gin	...	316	...	306	...	622
Liquors of sorts	...	658	...	3,591	...	4,249
Sherry	..	9,770	...	4,581	. .	14,351
Madeira	...	2,272	...	...	...	2,272
Port	...	2,292	...	2,011	...	4,303
Iron	...	4,534	...	1,797	...	6,331
Millinery	...	...	...	670	...	670
Oil Gingely	...	...	...	364	...	364
,, Lamp	...	348	...	104	...	452
,, Of sorts	...	...	...	36	...	36
Cheese	...	964	...	50	...	1,014
Hams	...	1,086	...	...	...	1,086
Sauces	...	200	...	...	...	200
Plated ware	...	750	...	...	...	750
Chintz	...	1,100	...	506	...	1,606
Long Cloth	...	5,080	...	...	...	5,080
Muslins	...	...	...	172	...	172
Cholies	...	...	...	90	...	90
Cloth of sorts	...	115	...	257	...	372
Dowties	...	1,413	...	20	...	1,433
Handkerchiefs	...	120	...	1,063	...	1,183
Checked	...	440	...	...	...	440
Moories	...	1,389	...	...	...	1,389
Muslins	...	...	...	176	...	176

Value and Estimated weight of Exports from Madras by land into B[illegible] Districts, in the year 1842–43.

Exports.	Bellary.		Cuddapah.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	Rs.	Cwts.	Rs.	Cwts.	Rs.
Piece goods of sorts	...	...	..	148	...	148
Rumals of sorts	...	30	...	6	...	36
Soosies...	...	125	..	...	..	125
Tafita	...	64	...	...	...	64
Turbands of sorts	...	...	...	96	...	96
Raw silk	..	840	...	...	...	840
Saddlery	...	...	...	625	...	625
Stationery	...	200	...	260	...	460
Snuff	...	45	...	...	...	45
Sugar	...	...	...	17	...	17
Cardamum seeds	...	683	...	8	..	691
Pepper	...	100	...	282	...	382
Sundries Europe	...	46,106	..	6,328	...	52,434
,, Country	...	72	...	61	...	133
Tea	...	378	...	290	...	668
Timber	...	..	...	200	...	200
Reapers	...	400	...	...	...	400
Wearing Apparel	...	2,215	...	890	...	3,105
				Grand Total........	Cwts. 96⅞	Rs. 1,67,313

RICHARD A. ROBERTS, Lieut.,

Engineers.

Financial (Railway) Department.

No. 15.

To the SECRETARY to the GOVERNMENT of INDIA.

Sir,

With reference to Mr. Officiating Secretary Plowden's letter of the 25th November 1853, No. 1050, requesting that when the Railway Surveys therein alluded to have been completed, the results may be reported for the consideration of the Supreme Government with such observations as this Government may desire to offer, I am now directed by the Right Honorable the Governor in Council to forward for submission to the Government of India copy of a report from the Consulting Engineer, with one from Lieutenant Roberts on the Survey of a portion of the country selected as the most direct course for a line of Railway from Madras to Bellary, through the Cuddapah District.*

2. This Survey was undertaken under the instructions of the Supreme Government conveyed in para 7 of their letter of the 4th March 1853, No. 164, in order to set at rest the question of the practicability of carrying a Railway viâ Cuddapah. The line selected commences from the present Railway at a point 12 miles from Madras, and goes over the Ballapilly Pass to Cuddapah, passing through the heart of the District and its Capital, and opening up a part of the country in its entire course to Bellary. It will be seen from the Reports now transmitted and from the accompanying Extract from a previous Report of the 25th April 1854, that Lieutenant Colonel Pears considers the construction of a Railway upon this line to be perfectly feasible, and that he entertains no doubt even of its practicability within an expenditure justified by the importance of the Districts through which it passes. He thinks that it may be confidently expected that Rs. 70,000 per mile would complete and stock this line, a distance of 296 miles, 12 of which is on the present Railway.

Paras 33 to 37.

3. In his report, Lieutenant Colonel Pears points out another mode of getting into the District of Cuddapah, that by the Doorenella Pass after crossing the Penaur, through which a line is proposed for the benefit of the Cuddapah District as well as those of Bellary and Nellore, and then proceeds to consider whether the desired end, that of meeting the requirements of the Cuddapah District and at the same time completing the connection with Bombay via Bellary, may not be attained by other and more effectual measures. His views on the subject are given at length in paras 22 to 44 of his report, to which I am desired to request the attention of the Government of India, as well as to the observations of this Government, contained in the accompanying Extract from the Minutes of Consultation of this date.

4. Lieutenant Colonel Pears, it will be observed, strongly urges that as fulfilling better the objects aimed at in projecting the direct line from Madras by Balapilly to Cuddapah and Bellary, and being still further and more generally useful, two lines be carried out: one from Bellary to meet the contemplated canal navigation of the Eastern Coast at a convenient point in the Nellore District—and the other from Bellary to Bangalore to complete the wanting link in a system already sanctioned for perfecting the means of communication between Madras and Bombay; and he recommends that the Government should undertake one of these lines and have it constructed by their own Officers.

5. I am accordingly directed to submit these propositions for the consideration of the Government of India, and to solicit their orders as to which of the lines described by Lieutenant Colonel Pears should be adopted, and whether the Government should undertake the construction of any of them.

6. I am desired at the same time to forward to the Government of India copy of a report submitted by the Consulting Engineer under date 16th September 1853, furnishing survey of a line for a Railway from Vaniembady to Kongoondy Coopum on the table land above the Eastern Ghauts, 60 miles from Bangalore—together with an estimate of the cost of constructing a single line, framed in accordance with the instructions of the Supreme Government.

7. The portion of the proposed branch line which has been surveyed and estimated for, extends to a distance of 20 miles, and presents all the engineering facilities for a Railway; both

the opening in the Ghauts at the above mentioned place, and the character of the country throughout that extent, are remarkably favorable for such an undertaking—and the ascent of the Pass is described to be "so easy, and the planes or gradients by which a Railway would be carried "up to differ so little from those by which the Ghauts would be approached from below, that it "would be difficult to assign to the Pass any precise limits." These results, which are more fully detailed in Lieutenant Colonel Pears' report, are considered by the Government to be very satisfactory, as demonstrating the perfect feasibility of the line.

8. The Hon'ble Mr. Thomas dissents from the views of Colonel Pears, and has recorded his opinions in a minute which accompanies the Proceedings of Government of this date.

I have, &c.
H. C. MONTGOMERY,
Chief Secretary.

Fort Saint George, 13th December 1854.

Financial (Railway) Department.

No. 260.

Extract from the Minutes of Consultation dated 13th December 1854.

Read the following report of the Consulting Engineer for Railways.

(Here enter 7th October 1854, No. 52.)

Read also the following Minutes.

By the R. H. the President..............Here enter 24th October 1854, No. 284.
,, H. E. the Commander-in-Chief...... do. 26th October ,, ,, 285.
,, the Hon. Mr. Thomas............... do. 1st November 1854, ,, 286.

Para 1. The Survey which forms the subject of the foregoing report was undertaken under the instructions of the Government of India, conveyed in para 7 of their letter of the 4th March 1853, No. 164, in order to ascertain the feasibility of a line for a Railway from Madras to Bellary through the District of Cuddapah.

2. This question is set at rest by the preliminary Survey executed by Lieutenant Roberts, and now laid before Government with his report. The line selected as the most direct course for a Railway, commences from the present Railway at a point 12 miles from Madras, and goes over the ridge near Tripetty into the Chitwail valley to Cuddapah, passing through the heart of the District and its capital and opening up a part of the country in its entire course to Bellary. This line will give Cuddapah the full benefit of the Railway, and will accomplish the Political objects in view by completing by the shortest possible route the connection with Bombay. (Paras 14 to 16.)

3. The only difficulties to be encountered in the course of this line are the Ballapilly Pass which, though not so very high, is so abrupt as to render it necessary to cross it by several curves—this Lieut. Colonel Pears considers an objectionable feature in the line. Next is the low range of hilly country to be met with between the Cheyaur and Penaur, where some very severe work is anticipated, and there are five broad rivers with sandy beds, the bridging of which, it is stated, will be both troublesome and expensive. The whole distance is 296 miles, but 12 being on the present Railway, there would remain 284 miles to be made, to reach Bellary by this route. (Paras. 17 and 10.) (Para. 14.)

4. The cost of the whole line from the junction with the Madras Railway to Bellary is estimated by Lieutenant Roberts at 163 lacs of Rupees, or at an average rate, of Rupees 57,000 per mile, which includes every thing but rolling stock and other furniture, and Lieutenant Colonel Pears thinks it may be confidently expected that Rupees 70,000 per mile would complete and stock this line.

5. In a previous report of the 25th April 1854, para 35, Colonel Pears states, that the general opinion which he has formed upon this very important line, is that the construction of a Railway from Madras by Cuddapah to Bellary is perfectly practicable, but that there are certain features in the character of the country which will render it, compared with the majority of Indian lines, an expensive one, and in para 37, he adds. "Of the practicability of the line there can now be no doubt; of its practicability within an expenditure justified by the importance of the Districts through which it passes, I entertain no doubt either." He further observes in the same para "that £8,000 per mile would cover all expense even on the difficult line of Cuddapah and Bellary; the fertility of these two Districts, the peculiar and important character of their products, and the difficulties under which they have hitherto labored for want of good communications are all well known to Government, and the desirableness of establishing, if possible, at reasonable cost, a line of Railway through them and towards Bombay has been fully recognized."

Paras 11 and 13. 6. Another mode of getting into the District of Cuddapah presented itself to Lieutenant Roberts during his examination of the country, viz., to run up nearly north from Madras, leaving that District and all the hill country to the left, until the Pennaur is crossed, and then enter by the Doorenella Pass into the Budwail valley, thence leaving Cuddapah 15 or 20 miles to the south, proceed direct viâ Gooty to Bellary. The distance of this line allowing for curves, is computed at 310 miles.

Para 16. 7. Of the two lines, Lieutenant Colonel Pears is of opinion that the latter would, under all the circumstances, be the best for the political object in view, while at the same time it would confer many benefits, both commercial and social, upon the Districts of Bellary, Cuddapah and Nellore. But he adds, to give Cuddapah itself the full benefit of the Railway, the former line by Balapilly and the Chitwail valley must be selected, which would accomplish the political objects quite as well, though at somewhat greater cost.

8. Lieutenant Colonel Pears then proceeds to consider whether the desired end, that of meeting the requirements of this important District and at the same time completing the connection with Bombay viâ Bellary, may not be attained by other and more effectual measures, and his views on the subject are given at length in his very clear and able report, in which he seems to have well considered all the bearings of a question of this vast importance. Paras 22 to 24.

9. Without following Colonel Pears through all the arguments advanced in support of his propositions, it will be sufficient to observe that he has adduced strong reasons for completing the line from Madras to Bellary viâ Bangalore. Colonel Pears considers that under present circumstances the construction of this line would confer, in a commercial and social point of view, greater benefits on the country at large than the direct line from Madras through Cuddapah would, and that it would not only complete the communication with Bombay and thus secure the attainment of the political ends aimed at by the connection between Madras and that Presidency, but would greatly facilitate and promote intercourse between the Northern and Central portions of this Presidency, the province of Mysore and the Southern Districts about Salem and Trichinopoly, as well as those around Madras. It would also connect the Military station of Bellary directly with that of Bangalore and the Head Quarters of the Army; and would give to Bellary in such unfavorable seasons as the present, the full and immediate benefit of the usually abundant supplies of grain in the Mysore country. Paras 38 to 44.

10. Colonel Pears accordingly recommends that the direct line from Madras by the Balapilly Pass to Cuddapah and Bellary be not adopted, and that as fulfilling better the objects aimed at in projecting that line, and being still further and more generally useful, two lines be carried out, one from Bellary to meet the contemplated Canal along the Eastern Coast at some point near Vullarpaud in the Nellore District, and the other from Bellary to Bangalore to supply the wanting link in a system already sanctioned, for perfecting the communication between Madras and Bombay.

11. Colonel Pears also recommends that if these two lines cannot be carried out simultaneously, that between Bangalore and Bellary should be executed first, and he is of opinion that it would be conducive to the interests of the country and ultimately of the Railway Company, if the Government would undertake the construction of one of these lines by its own officers, the working of such line, when completed, being leased upon certain conditions either to the existing Railway Company or other body.

12. This Government having been requested in Mr. Secretary Plowden's letter of the 25th November 1853, No. 1050 to report the results of the surveys, when completed, for the consideration of the Supreme Government with such observations as it may desire to offer, the Right Honorable the Governor in Council resolves to forward the survey and reports now laid before him by Lieutenant Colonel Pears, together with a copy of these Proceedings to the Government of India, and to solicit their decision as to which of the lines mentioned by that Officer should be adopted, and whether this Government should undertake any of them.

13. It appeared to the Government that pending this reference, the services of Lieutenant Roberts will scarcely be required by Colonel Pears for the objects stated in para 53 of his report, and that officer has accordingly been directed to take up his appointment as Assistant to the Secretary to the Board of Revenue in the Department of Public Works, to which he was lately nominated.

14. Ordered, that the reports submitted by Lieutenant Colonel Pears be printed, and copies forwarded to the Honorable the Court of Directors by the earliest opportunity.

15. Ordered that the following letter be despatched.

(Here enter 13th December, 1854.)

(True Extract)

H. C. MONTGOMERY,

Chief Secretary.

TO THE SECRETARY TO THE GOVERNMENT OF INDIA.

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